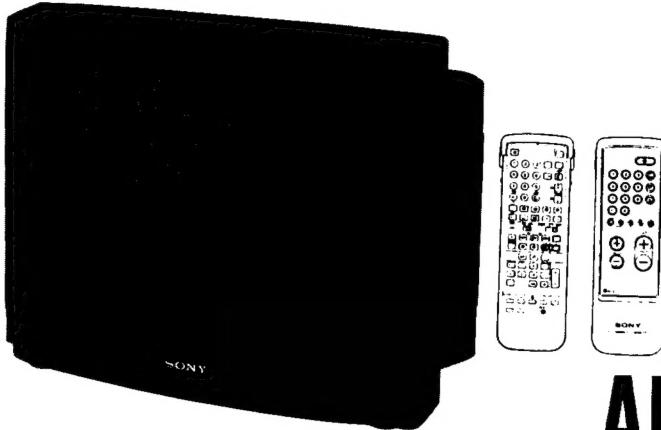


# KV-A2110B/A2510B

## RM-816

## SERVICE MANUAL



*French Model*

KV-A2110B

Chassis No. SCC-E19C-A

KV-A2510B

Chassis No. SCC-E19E-A

**AE-1C CHASSIS**

MODELS OF THE SAME SERIES	
KV-A2110B/A2510B	
KV-E2521B/E2921B	

### SPECIFICATIONS

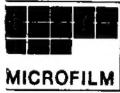
#### 【KV-A2110B/A2510B】

Television system	B/G/H, I, L
Color system	PAL, SECAM, NTSC3.58, NTSC4.43
Stereo system	GERMAN stereo
Channel coverage	VHF: F2-F10    UHF: E21-E69 CABLE TV : C-Q/S1-S20 HYPER S21-S41
Picture tube	Black Trinitron tube Approx. 54.5 cm (21 inches) (Approx. 51 cm picture measured diagonally) 110 ° -degree deflection Approx. 63.5 cm (25 inches) (Approx. 59 cm picture measured diagonally) 110 ° -degree deflection ↗ 1 21-pin connector: CENELEC standard including RGB input. ↗ 2 21-pin connector: including S video input Front : ↗ 3 Audio and video input jacks: phono jack. Y: 1Vp-p±3dB 75ohm C: 0.3Vp-p±3dB 75ohm 21-pin connector: CENELEC standard Headphones jack: stereo minijack External speaker terminals: 2-pin DIN Audio output jacks: phono jack (output dependent upon TV settings)
Inputs	
Outputs	

Sound output	30 W + 30 W
Power consumption	98Wh (KV-A2110B) 112Wh (KV-A2510B)
Dimensions incl.speakers	Approx. 615x439x488 mm (w/h/d) (KV-A2110B) Approx. 677x501x481 mm (w/h/d) (KV-A2510B)
Weight incl.speakers	Approx. 28.0kg (KV-A2110B) Approx. 40.0kg (KV-A2510B)
【RM-816】	
Remote control system	infrared control
Power requirements	3V dc 2 batteries IEC designation R6 (size AA)
Dimentions	Approx. 75×221×23mm(w/h/d)
Weight	Approx. 194g IEC designation R6 batteries (2)

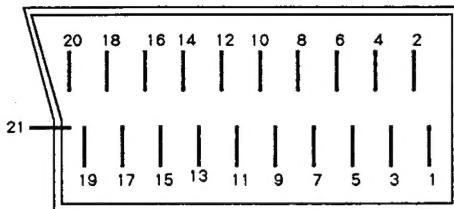
Design and specifications are subject to change without notice.

**TRINITRON® COLOR TV**  
**SONY®**



MICROFILM

**21-pin Euro Connector Configuration**



PIN	SIGNAL	SPECIFICATION
1	Audio output	0.5Vrms/1kilohm or less
2	Audio input	0.5Vrms/10kilohms or more
3	Audio output	0.5Vrms/1kilohm or less
4	Earth (audio)	
5	Earth (B-input)	
6	Audio input	0.5Vrms/10kilohms or more
7	B-input	0.7Vp-p/75ohms
8	Function switching	9.5V to 12V
9	Earth (G-input)	
10		
11	G-input	0.7Vp-p/75ohms
12		
13	Earth (R-input)	
14	Earth (blanking)	
15	R-input	0.7Vp-p/75ohms
16	Fast blanking	1V to 3V/75ohms
17	Earth (video)	
18	Earth (fast blanking)	
19	Video output	1Vp-p/75ohms
20	Video input	1Vp-p/75ohms
21	Screening plug	

**SAFETY-RELATED COMPONENT WARNING !!**

COMPONENTS IDENTIFIED BY SHADING AND MARK ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

**ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!**

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET PAR UNE MARQUE SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIÈCES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÈCE EST INDICUIT DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY.

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# SECTION 1

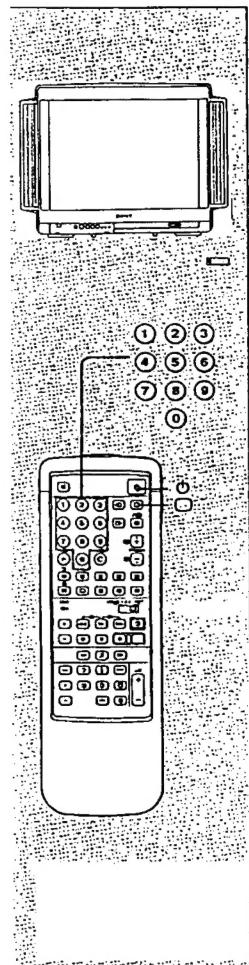
## GENERAL

### 1-1. TV CHANNEL PRESETTING

After installing the TV set, TV channels must be preset.

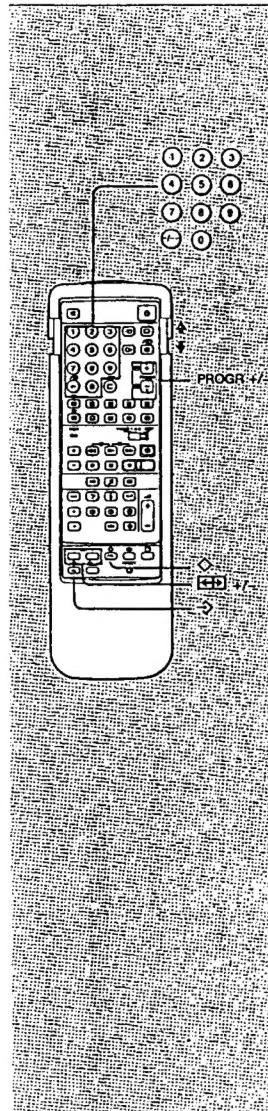
TV broadcasting stations broadcast their programmes on certain fixed frequencies (channels). In order to receive these programmes it is necessary to search for the relevant broadcasting station and to set record it as a channel. The "programme number" is the number that the user decides to associate with a certain channel.

For channel settings there are 60 positions available in the memory. In this way all stations broadcasting within the user's country can be received and recorded as a channel.



#### Turning the TV unit ON and OFF

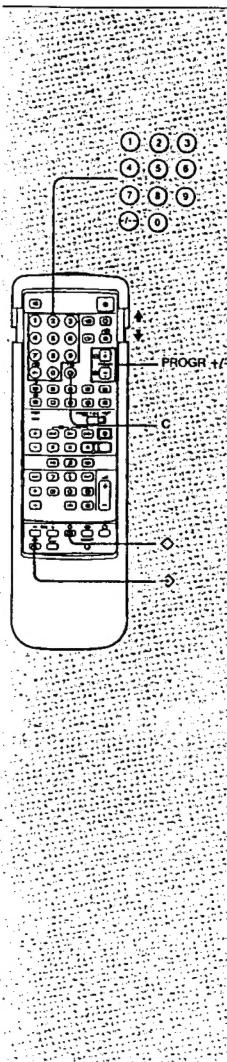
Operation	Result
1 Press  on the TV set.	The TV set will come on. Note: If no picture appears on the screen, the TV set is in the stand-by mode. In this case follow instructions given in step 2.
2 Press  or one of the selection numbers of the remote control unit.	A programme number appears on the screen.
Temporarily turning off the TV set: Press  on the remote control unit.	The TV set will enter the stand-by mode. It can be turned on again by pressing the  button, or the selection button of the remote control unit.
Turning off the TV set definitely: Press  on the TV set.	The TV set will be turned off.



#### TV channels automatic presetting

If the numbers to be associated with certain TV channels are already known, the following explanation can be skipped. In this case go directly to the section "TV channels direct selection".

Operation	Result
1 Press  to begin the preselection.	The programme number flashes.
2 Press PROGR +/− buttons of the remote control unit to select the channel number of the broadcasting station you want to memorize.  	The programme number on the screen changes. NOTE: In case of a mistake, the "X" letter appears. Repeat once more the operation of step 2.
3 To search for broadcasting stations press  and  buttons.  	When a broadcasting station is tuned correctly, the search will stop. If you want to skip it, press  or  again.
4 Press  to memorize the channel to that the broadcasting station is tuned.	All data visualized under the channel number disappears from the screen.
5 To memorize other broadcasting stations repeat steps from 1 to 4.	

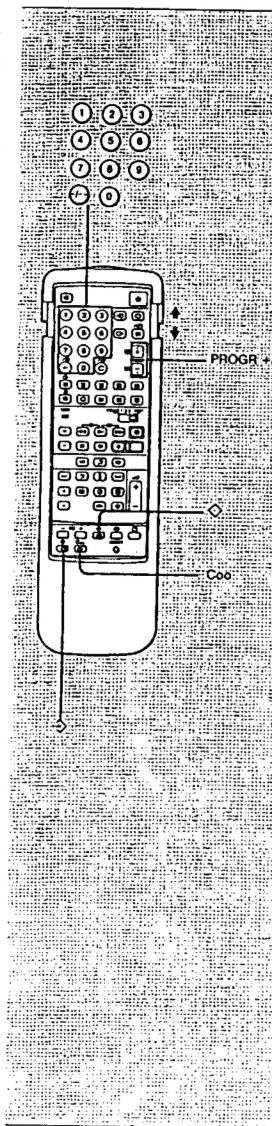


### Direct TV channel setting

Direct presetting of TV channels is faster than automatic presetting. With this function any broadcasting station can be searched for and set as the desired channel.

Operation	Result
1 Press $\rightarrow$ to begin the presetting.	The programme number begins to flash on the screen.
2 Press the PROGR +/− buttons of the remote control unit to select the channel number under which you want to set the broadcasting station.	The programme number on the screen changes. Note In case of mistake, the "X" letter appears on the screen. Repeat once more the operation of step 2.
3 Press C. If you wish to select a cable station press C twice.	Indication "C—" ("S—" for cable stations) flashes on the screen
4 By using the number buttons of the remote control unit select the channel number, always with two figures (for "4" press "04"). 	The channel number changes on the screen.
5 Press $\diamond$ to memorize the channel to which the station is tuned.	All indications, except the programme number, disappear from the screen.

To memorize other broadcasting stations repeat the above procedure.



### Exclusion of programmes

Once all desired stations have been memorized, unoccupied channel numbers, with stations of inferior quality signals can be excluded. The undesired channels can be excluded by using the PROGR + and - buttons.

Operation	Result
1 Press $\rightarrow$ to begin presetting.	The programme number begins to flash on the screen.
2 By acting on the PROGR + and - buttons, or on the number keys of the remote control unit, select the programme number you wish to exclude.	The programme number changes.
3 Press Coo.	Under the programme number, the preceding channel number appears.
4 Press $\diamond$ .	All indications under the programme number disappear from the screen. The excluded programme number will be memorized.

#### Note

Undesired channels can be excluded only by using PROGR + and - keys.  
Excluded programme numbers appear on the screen if you press the number keys of the remote control unit.

### Use of additional tuning functions

#### Temporary channel tuning

It is possible to temporarily memorize a channel, even if it has not been preset.

Operation	Result
1 Press C. Press C twice for a cable station.	"C" ("S" for cable stations) indication appears on the screen.
2 Using the number keys of the remote control unit select the channel number, always with two figures (e.g., "04" for channel "4").	The channel will be received, but it will not be set as a programme number.

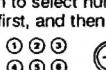
## 1-2. BASIC FUNCTIONS

This section of the manual explains the use of the two fundamental functions of the TV set, selection of TV programmes and volume control.

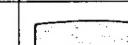
Use the "simple" side of the remote control unit.

## Programme selection

Before selecting programmes make sure that TV channels have been memorized.

Operation	Result
<p><b>1</b> Turn the TV set on.</p> 	
<p><b>2</b> Press PROGR +/- buttons or the number keys of the remote control unit. To select a 2-figure number press +/- button. E.g., if you wish to select number 23, press +/- first, and then 2 and 3.</p> 	 <p>The selected programme number appears on the screen.</p>

## Volume control

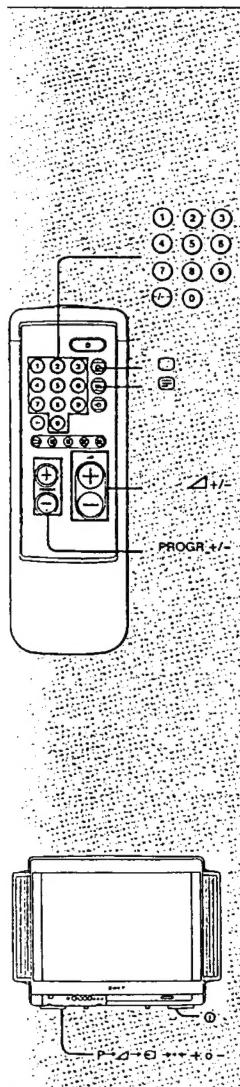
Operation	Result
<p>Press <math>\Delta</math> + or -.</p> 	 <p>The volume indication appears on the screen.</p>

## Use of additional functions

**Use of other functions with the TV set buttons**  
It is also possible to select programmes and to adjust the volume by using P→ ↘→ ↙ and →← + or - buttons, located on the front panel of the TV set.  
In this case, press first P→ ↘→ ↙ until the indication P (channel) or ↘ (volume) appears on the screen, and then press →← + or - buttons.

### Use of teletext service

Press **(2)**. To revert to the TV mode, press **(0)**. For further information on the teletext service see pag. 13.



## 1-3 SPECIAL FUNCTIONS

This section explains the use of functions for adjusting pictures and sound; for inserting on the screen the name of a channel; and for fine tuning of a channel.

Use the "complete" side of the remote control unit.

## Use of special functions

The following functions can be used.

Function	Operation	Reset
Indication display	Press <b>G</b>	Press <b>G</b> again.
Sound muting	Press <b>H</b>	Press <b>H</b> again.
Language selection for bilingual programmes.	Press A/B. The selected language is displayed by the relevant indication on the screen.	Press A/B.
Sound adjustment for music programmes.	Press <b>J</b>	Press <b>J</b> again.
Use of special sound effects.	Press <b>K</b>	Press <b>K</b> again.
Time display (only during teletext broadcasting).	Press <b>L</b>	Press again.

## Picture and sound adjustment

Although picture and sound adjustment has already been performed in the factory, it is still possible to make them more suitable to one's own taste. The following table shows all available functions and their effects.

## Operation

Function	Controls to be used	Result
Button selection		The symbol appears on the screen.
Adjustment of the selected function		The level has been adjusted.

#### **Picture adjustment**

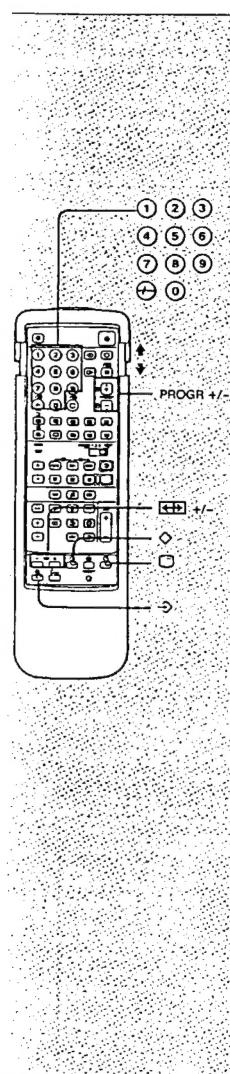
Adjustment	Symbol	Result (+ ↔ -)
Colour	⊕	Further or lesser colour intensity
Contrast	◐	Further or lesser contrast
Brightness	⊗	Bright (↔) dark
Hue (for NTSC only)	▣	More red ↔ more green
Picture definition	□	More definition ↔ less definition

## Sound adjustment

Adjustment	Symbol	Result (+ ↔ -)
Bass	♪	More of low frequencies ↔ less of low frequencies
Treble	♩	More of high frequencies ↔ less of high frequencies
Speakers balance	▷◁	Volume increase from right speaker ↔ Volume increase from left speaker

Reversion to the original adjustment  
Press → ← ↴ ↵.

## 1-4. USE OF THE TELETEXT SERVICE



### Broadcasting station identification

By associating a name with a certain broadcasting station it is possible to avoid having to remember, each time, in which channel number that particular station has been memorized.  
Five different characters are available for station identification.

Operation	Result
1 By using PROGR + or -, or the number keys of the remote control unit, select the programme number to be set for identification.	The programme number to be set for identification appears on the screen.
2 Press ↗	The number flashes on the screen.
3 Press □	The first indication line flashes on the screen.
4 Using the □ + or - buttons select - □ + a letter of the alphabet, a number, or a blank space.	Alphabet letters, numbers or a blank space (".") appear on the screen, in that order.
5 Press □	In this way the first character has been set, and the following position now flashes on the screen.
6 Repeat steps 4 and 5, and fill all five available spaces.	
7 Press ◇ .	All indications under the programme number disappear from the screen. All indications remaining on the screen have been memorized.

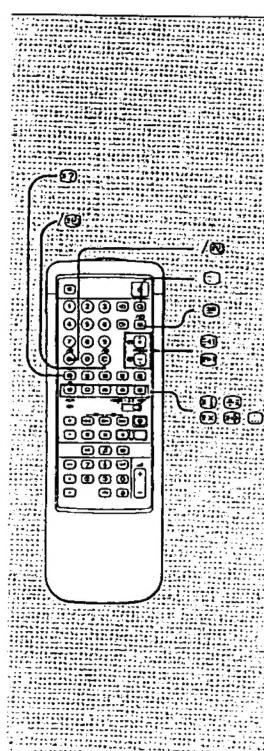
### Manual fine tuning

If the picture is not perfect, it is possible to fine tune it manually.

Operation	Result
Press □ + or - repeatedly until the picture is at the optimum.	The indication →F-- appears on the screen.
Press ↗ to start preselection.	The programme number starts flashing on the screen.
Press ◇ .	Manual fine tuning has been memorized.

Note: Manual fine tuning will be reset when the channel is selected again.

Ogni fine automatica viene ripristinata quando si cambia canale  
to un'altra volta.



Through the teletext service a great deal of information can be received at any time. Broadcasting stations make this service available through TV broadcasts. To use the teletext service, use the green keys on the "complete" side of the remote control unit. When the "simple" side of the remote control unit is used, only the basic functions are available.

### How to display teletext service

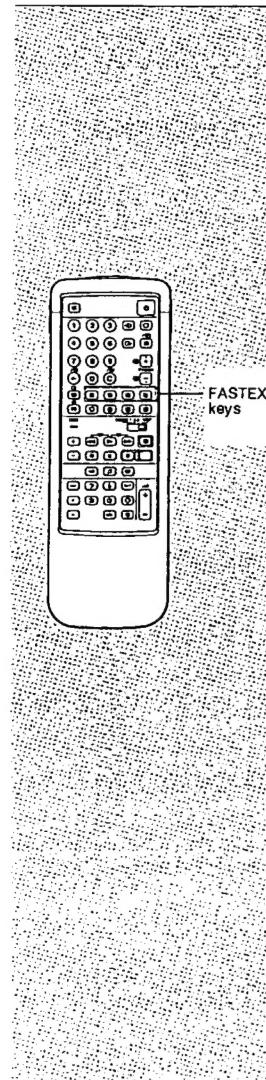
Operation	Result
1 Select the channel you want to watch.	The channel changes on the screen.
2 Press □	If there is no teletext signal, the indication "Page 100" appears on the screen.
3 Use the number keys of the remote control unit to insert the three figures corresponding to the desired teletext page. Note In case of a mistake, press any three numbers, and then repeat the operation with the correct numbers.	
To revert to normal TV programmes: Press □.	
To change teletext channel: First press □ to revert to the TV mode, and then repeat procedure steps 1 to 3.	

Note: A weak TV signal may cause troubles in the use of teletext.

### Use of special teletext functions

Required function	Operation	Result (on the screen)
Page index required.	Press □ (INDEX).	 Page index appears.
Sub-pages required (page 888).	Press □	The sub-page appears (page 888).
Access to previous or following pages.	Press □ (PAGE +) or □ (PAGE -).	 The preceding or the following page appears.

Required function	Operation	Result (on the screen)
Superimposition of the teletext on the TV programme.	In the TV mode, press $\textcircled{B}$ twice. To revert to the normal teletext function press $\textcircled{B}$ again.	 Teletext information will appear superimposed on the TV programme.
To prevent page changes due to page up-dating.	Press $\textcircled{B}$ (STILL). Press $\textcircled{B}$ (TXT/MIX) to revert to the normal function.	 The $\textcircled{B}$ (STILL) symbol appears on the screen.
Magnification of teletext characters.	Press once to magnify the upper half of the screen. Press twice to magnify the lower half of the screen. Pressing the button three times the normal vision is restored.	 The upper or the lower half of the page is magnified.
Display of hidden information (answers to quizzes, ecc.).	Press $\textcircled{B}$ (RIV). Press again to hide the answers.	 The information is displayed.
Watching a programme while the teletext searches for the required page.	1. Ask again for the page.	The number is displayed.
	2. Press $\textcircled{B}$	TV programme is displayed.
	3. When the required page has been found, the page number will be displayed.	 P201
	4. Press $\textcircled{B}$ to display the page.	The desired page will be displayed.
Display of a page at a preset time.	1. Request the page.	The selected page will be displayed.
	2. Press $\textcircled{B}$ (MEM.T).	In the lower part of the screen the indication "T****" appears.
	3. Set the required time by using the number keys, and by inputting four figures (e.g. 0730 for "7:30").	The required time is displayed on the screen.
	To watch TV programmes until a preset time Press $\textcircled{B}$ (CANC.). At the required time, the selected page appears in the upper part of the screen. Press $\textcircled{B}$ to display the page.  To cancel the request Display the teletext page and then press $\textcircled{B}$ (CANC.M.).	



#### Use of the FASTEXT function

The FASTEXT function allows rapid access, at the touch of a single button, to the teletext functions. In the lower part of the screen, a colour coded index will be displayed when a FASTEXT teletext page is broadcasted. Each colour corresponds to the coloured keys on the remote control unit.

#### Operation

Operation	Result
Press one of the coloured key on the remote control unit corresponding to the coloured indications of the FASTEXT teletext page.	The selected teletext page appears on the screen.

#### Note

The correct use of the FASTEXT teletext function depends on the signal being broadcast by the TV stations. Some TV stations may not broadcast FASTEXT teletext signal.

## 1-5. CONNECTIONS AND OPTIONAL FUNCTIONS

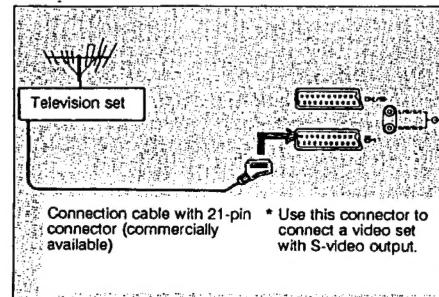
This TV set may be connected to other audio/video machines, such as videocameras, VTRs, videodisc players, or stereo systems.

### Connection to an external audio/video system

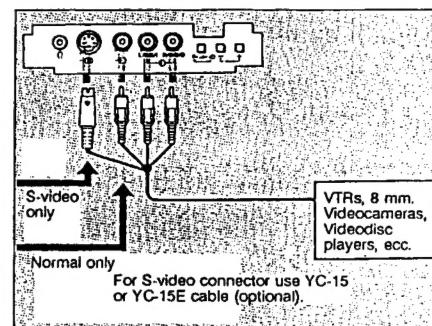
This TV set incorporates three groups of connectors, for input and output to the TV signal. Each group has the following characteristics.

Connector	Input signal	Output signal
Θ-1	Normal audio/video signal or RGB signal	TV tuner audio/video signal
Θ-2/Θ-	Normal audio/video signal and S-video signal	Audio/video signal from a selectable source
-Θ, Θ-, -Θ front panel	Normal audio/video signal and S-video signal	No signal

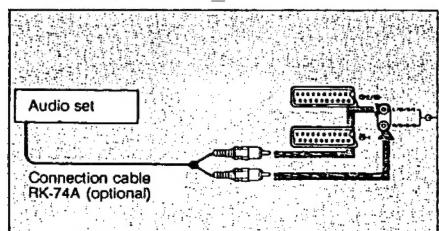
### Connection of a TV set



**Temporary connection of video apparatus**  
For a temporary connection (e.g. of a videocamera) use the front panel terminals.



### Connection of an audio unit

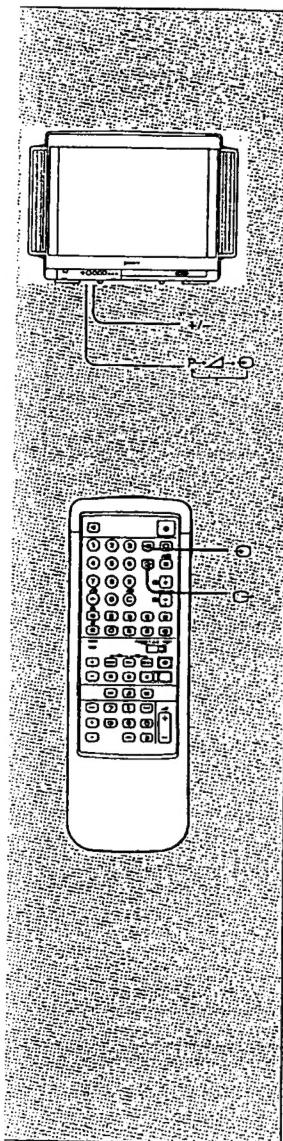
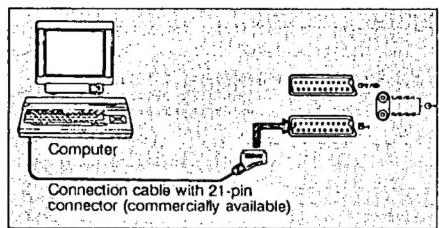


**Connection of a video taperecorder through the T connector**  
Connect the antenna input (AERIAL-IN) of the TV set to the antenna output (AERIAL-OUT) of the video taperecorder.

**S-video input (Y/C input)**  
The video signal is formed by two separate signals: the luminance (Y) and the chrominance (C). Through the separation of the two signals it is possible to improve picture quality (luminance in particular), preventing reciprocal interferences. This TV set features two S-video sockets able to directly receive this type of signal.

**Pictures with distortion**  
Move the TV set away from the video taperecorder if pictures or sound become distorted.

### Connection to a computer with RGB output



### Video programme playback

Using the input selector, pictures coming from a video taperecorder connected to the TV sets input, may be played back.

#### Operation

Operation	Result
Select the desired video input by pressing Θ repeatedly.	

Press □ button to revert to TV mode.

#### Selectable inputs

Symbol	Selected input
Θ 1	Audio/video signal from Θ-1 connector.
Θ	RGB signal from Θ-1 connector.
Θ 2	Audio/video signal from Θ-2/Θ- connector.
Θ 3	S-video signal (from a VTR with S-video output) from Θ-2/Θ- connector.
Θ 3	Audio/video signal from Θ, -Θ connector located on the front panel.
Θ 3	S-video signal from S-video -Θ (4 pin) connector located on the front panel.

Input can be selected also with

In this case, first select Θ, and then press the +/- buttons to select the desired input.

### Selection of video output from a Θ-2/Θ- connector

The Θ-2/Θ- connector may output 4 video signals. Select the outgoing video signal in the following way.

#### Operation

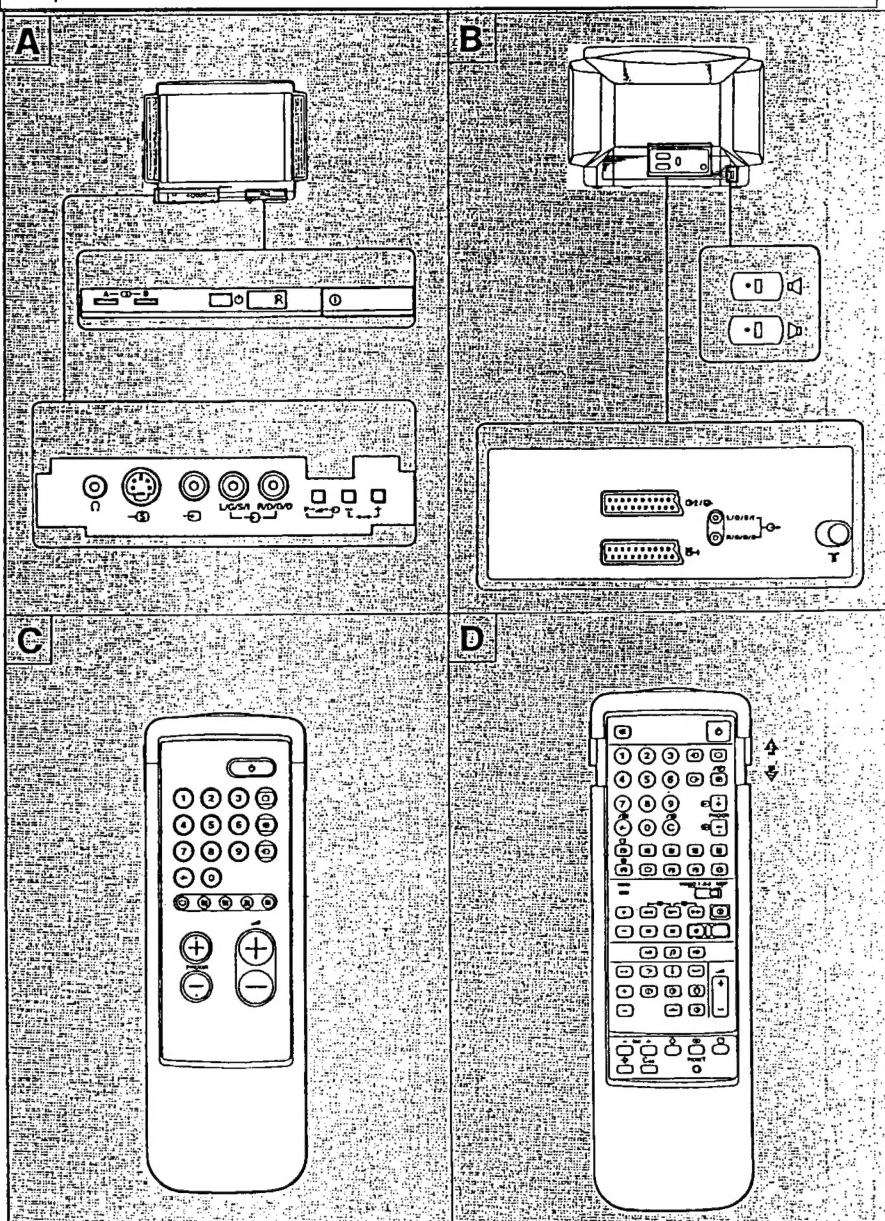
Operation	Result
Press Θ repeatedly to select the desired video input.	

#### Output signal

Symbol	Selected output
1 Θ-	Audio/video signal from Θ-1 connector.
2 Θ-	Audio/video signal from Θ-2/Θ- connector.
3 Θ-	Audio/video signal from Θ and -Θ connectors.
TV Θ-	Audio/video signal from T-type antenna connector T.

## 1-6. GENERAL INFORMATION

### Components identification



This section briefly describes controls of the TV set and the remote control unit, and their relevant functions. For further details see the page shown on the right side of each description.

A TV set front panel	
Indication	Description
①	Power switch
②	Stand-by switch
A—O—B	Bilingual function indications
③	Headphones connector (stereo mini-jack)
④	Input connectors (S-video/video/audio)
⑤	Function selector (programme/volume/input)
⑥	Function adjustment keys

B TV set rear panel	
Indication	Description
①	Speaker connectors (upper: left speaker; lower: right speaker)
②	Connector 2, Euro AV (SCART, 21-pin). S-video in/video in/TV/video out signals.
③	Connector 1, Euro AV (SCART, 21-pin). RGB in/video in/TV/out signals.
④	Audio output connectors (RCA pin)
⑤	Antenna connector (of IEC standard)

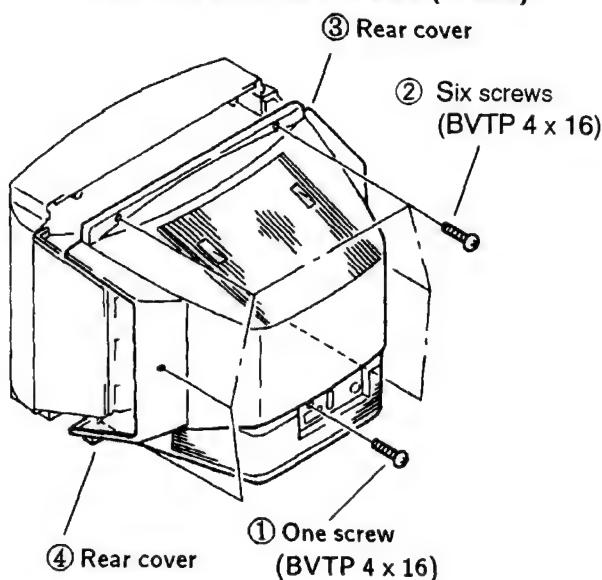
C Remote contro unit — simplified side	
Indication	Description
①	Input selector
②	Teletext service key
③	TV set power switch and TV mode selector
④	Standby key
⑤	Number keys
⑥	Channel selection key/2-figure programmes
⑦	Volume adjustment key
⑧	Programme selection key

D Remote control unit — complete side	
Indication	Description
①	Sound muting key
②	Standby key
③	1,2,3,4,5,6,7,8,9,0 Number keys
④	Input selector
⑤	TV set power switch and TV mode selector
⑥	Output selector
⑦	Teletext key
⑧	Music programme key
⑨	Bilingual programmes language selection
⑩	Channel selection key/2-figure programmes
⑪	Channel direct selection key
⑫	Special sound effect key
⑬	Time display
⑭	Teletext operation keys
⑮	Display key
⑯	Reset key
⑰	Volume adjustment keys
⑱	Programme selection keys
⑲	Image and audio adjustment keys
⑳	MEM
⑳	MEM light indication
⑳	VIDEO 1/2/3, MDP
⑳	Video unit selector
⑳	Video units function key
⑳	Programme cancelling key
⑳	Channel presetting key
⑳	Channel tuning keys
⑳	Channel storing keys
⑳	Broadcasting stations identification key
⑳	RESET
⑳	Cancel key

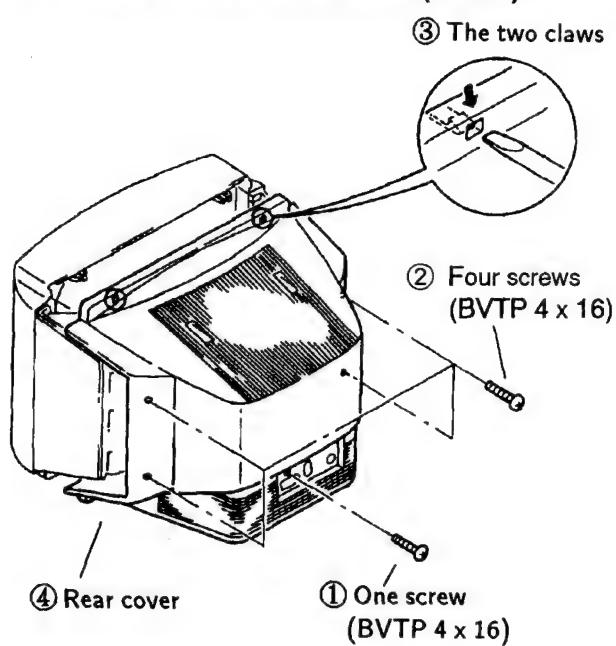
## SECTION 2

### DISASSEMBLY

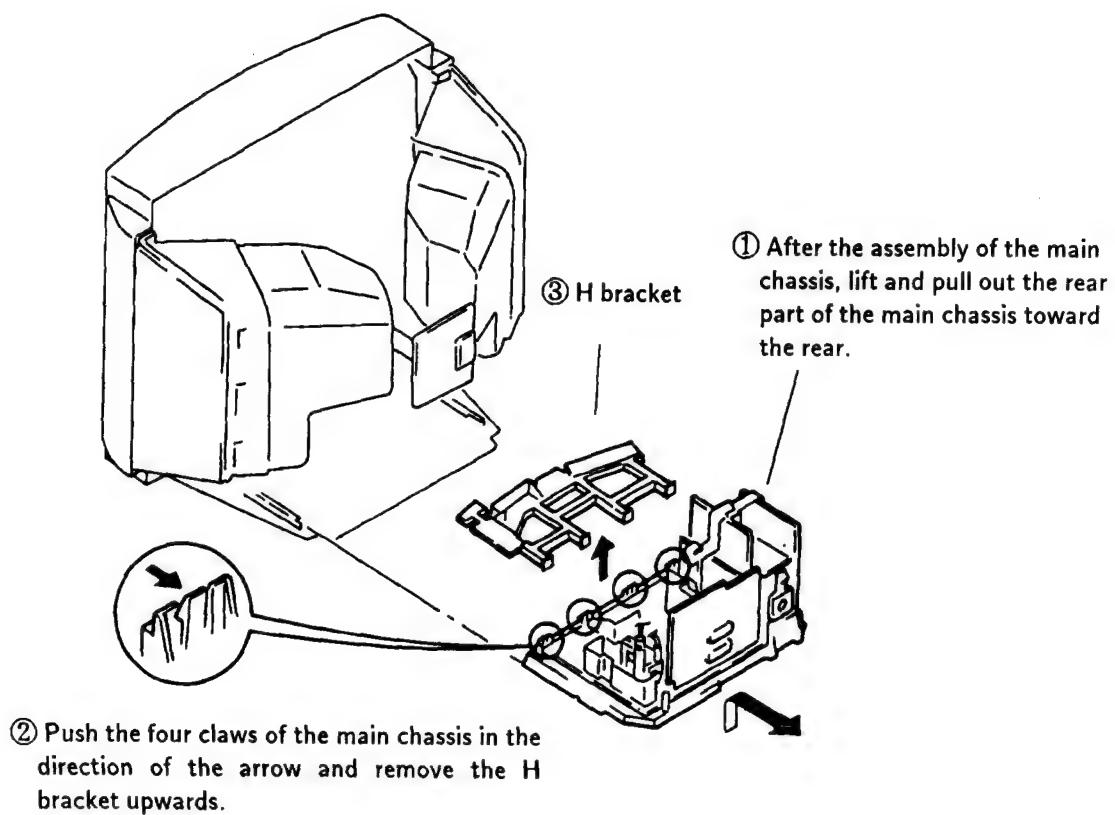
#### 2-1-1. REAR COVER REMOVAL (21 inch)



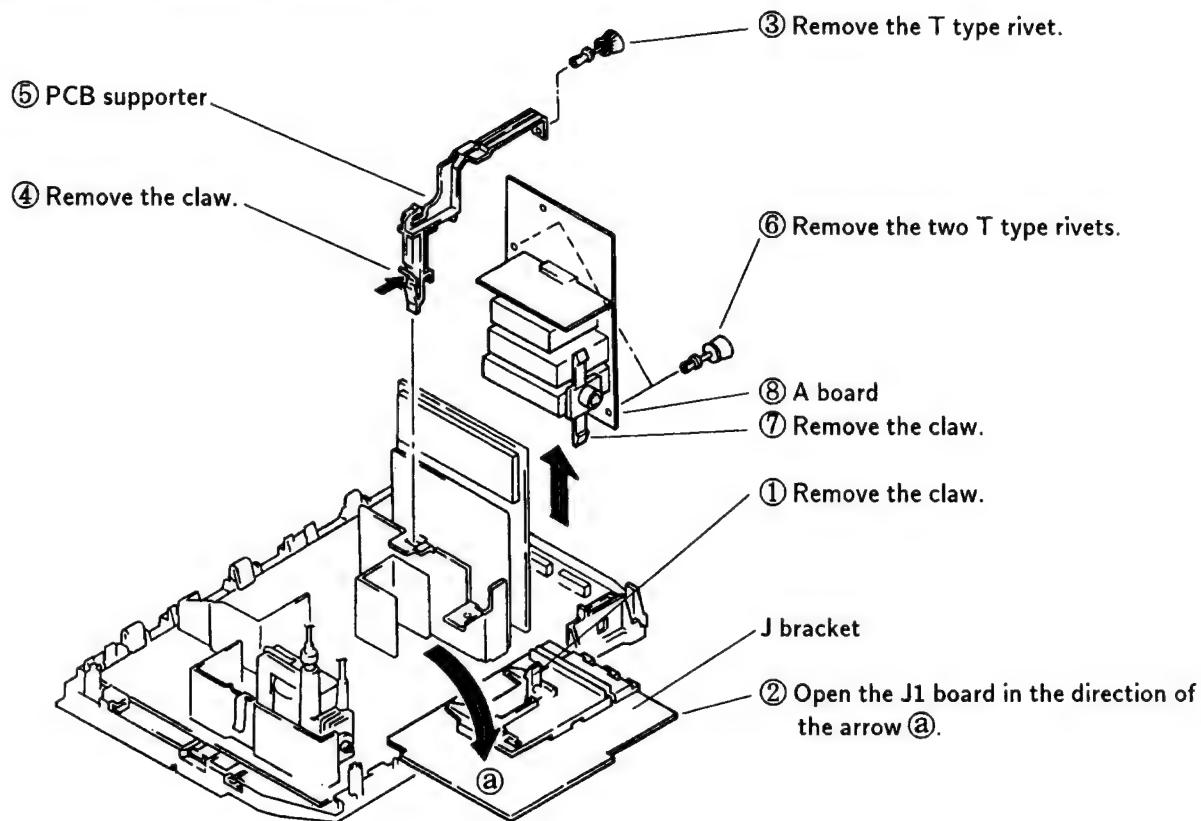
#### 2-1-2. REAR COVER REMOVAL (25 inch)



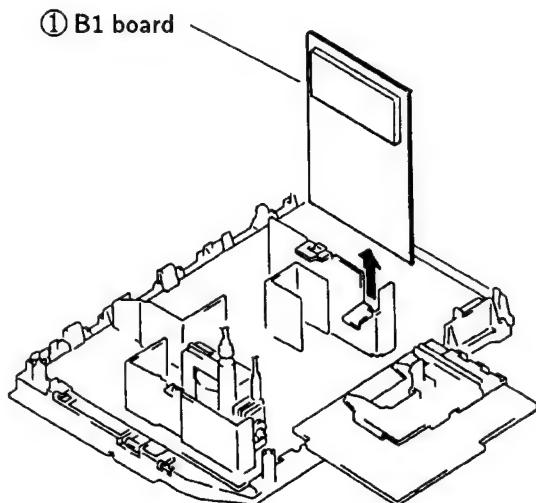
#### 2-2. CHASSIS ASSEMBLY REMOVAL



### 2-3. A AND J1 BOARDS REMOVAL

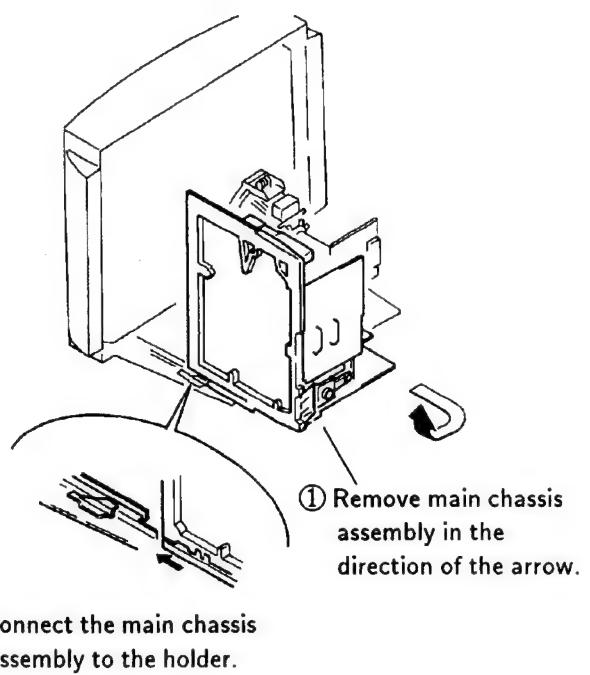


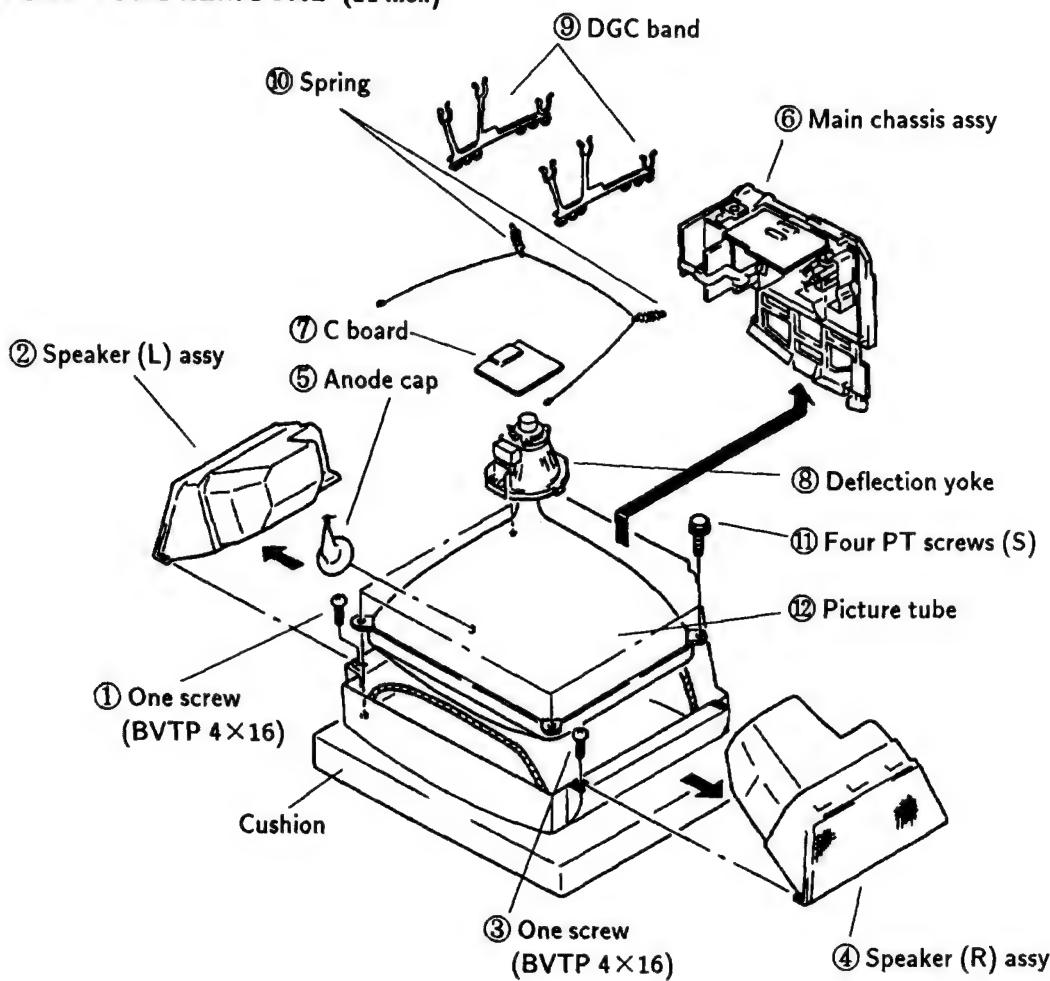
### 2-4. B1 BOARD REMOVAL



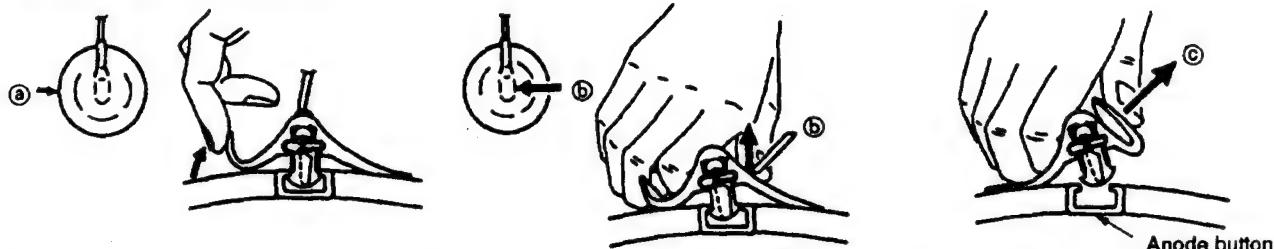
### 2-5. SERVICE POSITION

※ Remove the H bracket from the main chassis assembly and then perform the following servicing.  
(Refer to 2-2. CHASSIS ASSEMBLY REMOVAL.)



**2-6-1. PICTURE TUBE REMOVAL (21 inch)**

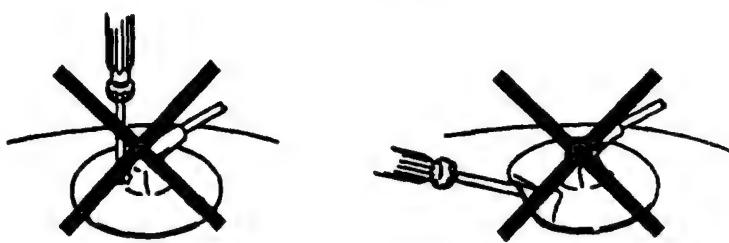
- **REMOVAL OF ANODE-CAP**
- **REMOVING PROCEDURES**



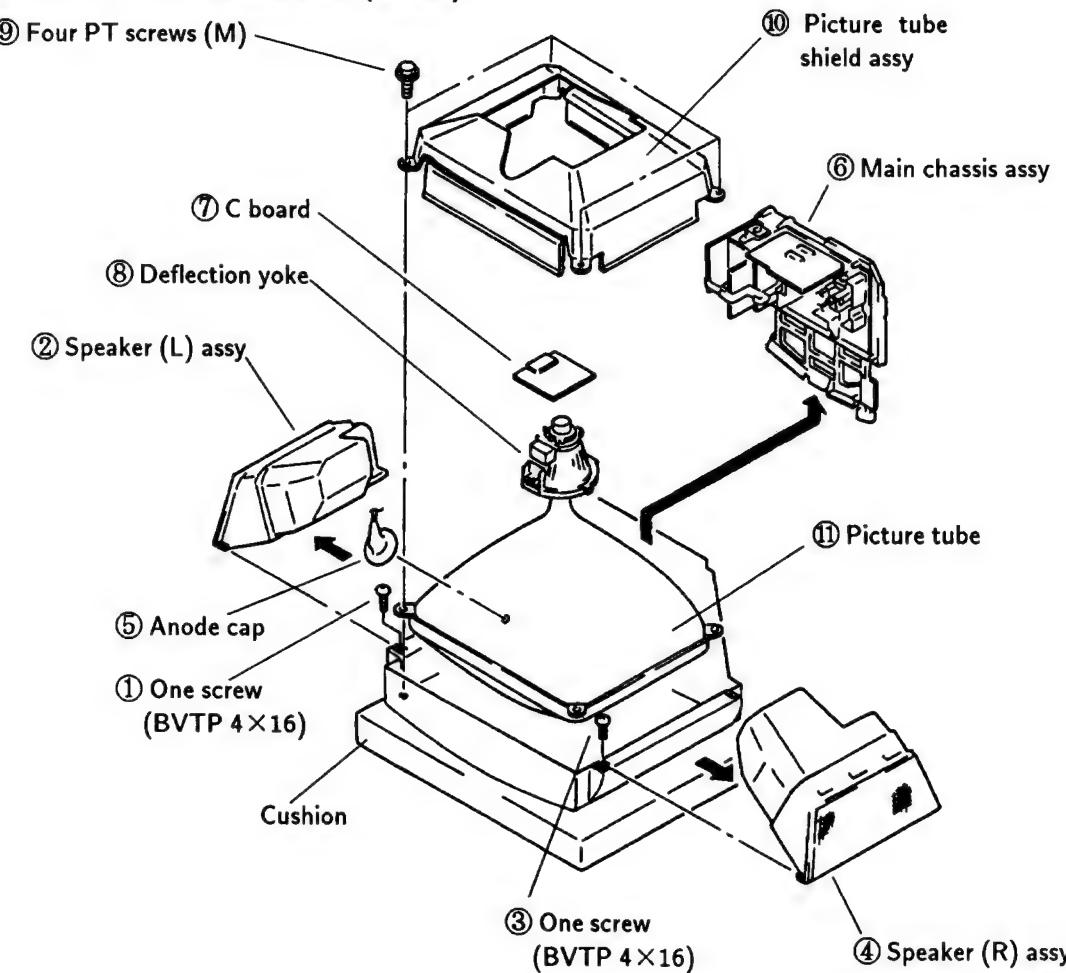
- ① Turn up one side of the rubber cap in the direction indicated by the arrow ①.
- ② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ②.
- ③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ③.

**• HOW TO HANDLE AN ANODE-CAP**

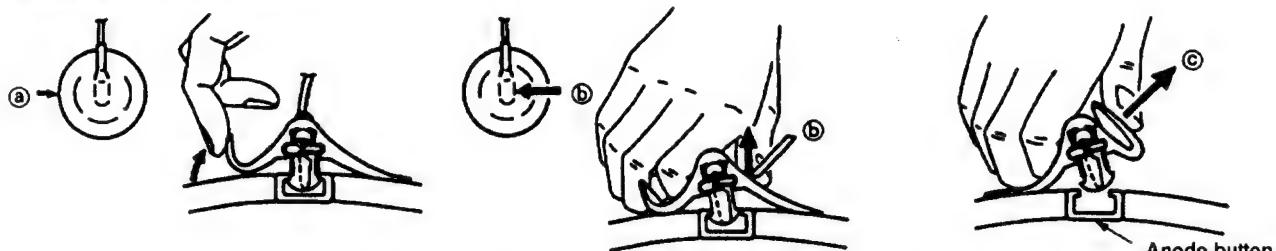
- ① Don't hurt the surface of anode-caps with sharp shaped material!
- ② Don't press the rubber hardly not to hurt inside of anode-caps!  
A material fitting called as shatter-hook terminal is built in the rubber.
- ③ Don't turn the foot of rubber over hardly!  
The shatter-hook terminal will stick out or hurt the rubber.



## 2-6-2. PICTURE TUBE REMOVAL (25 inch)



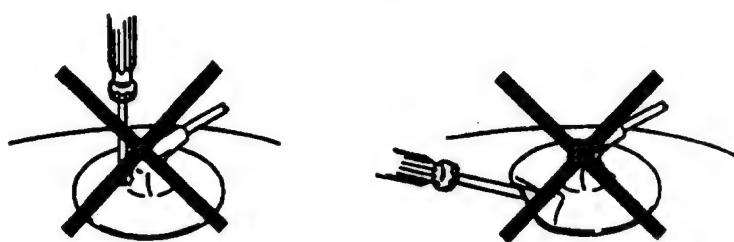
- **REMOVAL OF ANODE-CAP**
- **REMOVING PROCEDURES**



- ① Turn up one side of the rubber cap in the direction indicated by the arrow ①.
- ② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ②.
- ③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ③.

### • HOW TO HANDLE AN ANODE-CAP

- ① Don't hurt the surface of anode-caps with sharp shaped material!
- ② Don't press the rubber hardly not to hurt inside of anode-caps!  
A material fitting called as shatter-hook terminal is built in the rubber.
- ③ Don't turn the foot of rubber over hardly!  
The shatter-hook terminal will stick out or hurt the rubber.



## SECTION 3

### SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with rated power supply voltage unless otherwise noted. The controls and switch below should be set as follows unless otherwise noted :
  - CONTRAST control ..... 80% (or Normal by commander)
  - BRIGHTNESS control ..... 50%

Perform the adjustments in order as follows:

#### **Preparation:**

- Set the side of the unit with the PICTURE TUBE so that it faces east or west in order to reduce the influence of external magnetic force.
- Turn the power switch for the unit ON and erase the magnetic force using a degausser..

#### **3-1. BEAM LANDING**

Demagnetize with a degausser

1. Input a raster signal with the pattern generator.
- CONTRAST      } normal  
BRIGHTNESS    }
2. Turn the raster signal of the pattern generator to red.
3. Move the deflection yoke backward, and adjust with the purity control so that red is in the center and blue and green are at the sides evenly.  
(Fig.3-1 - 3-3)
4. Move the deflection yoke forward, and adjust so that the entire screen becomes red. (Fig.3-1)
5. Switch over the raster signal to blue and green confirm the condition.
6. When the position of the deflection yoke is determined, tighten it with a deflection yoke mounting screw.
7. When landing at the corner is not right, adjust by using the disk magnets. (Fig.3-4)

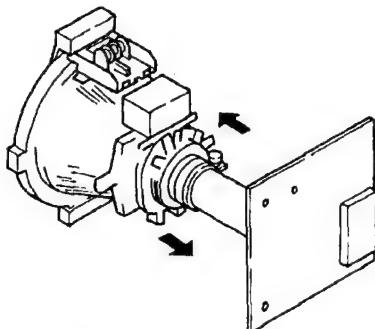


Fig.3-1

1. Beam Landing
2. Convergence
3. Focus
4. Screen (G 2) and White Balance

**Note:** Test Equipment Required.

1. Color bar/Pattern Generator
2. Degausser
3. DC Power Supply
4. Digital multimeter
5. Oscilloscope

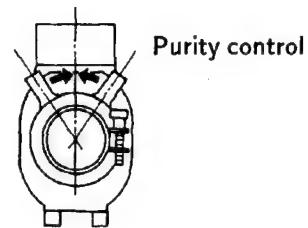


Fig.3-2

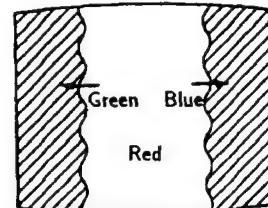


Fig.3-3

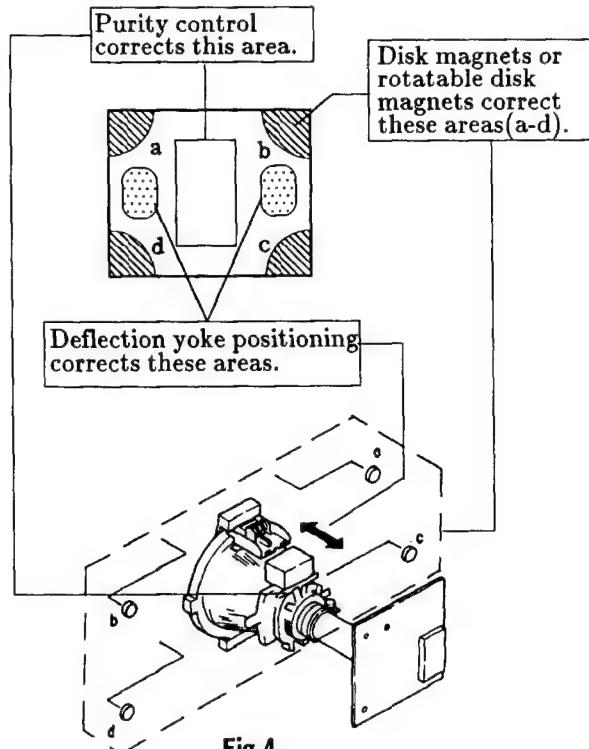


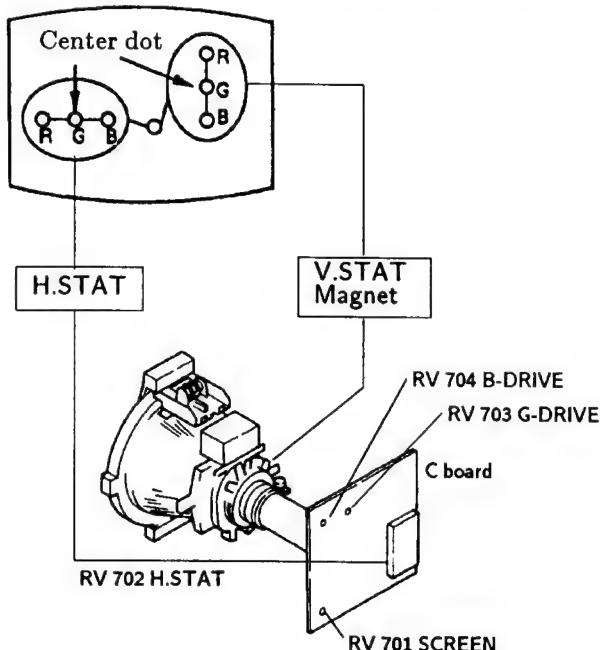
Fig.4

### 3-2. CONVERGENCE

#### Preparation:

- Before starting, perform FOCUS, H.SIZE, and V.SIZE adjustments.
- Set BRIGHTNESS control to minimum.
- Feed in the dot pattern.

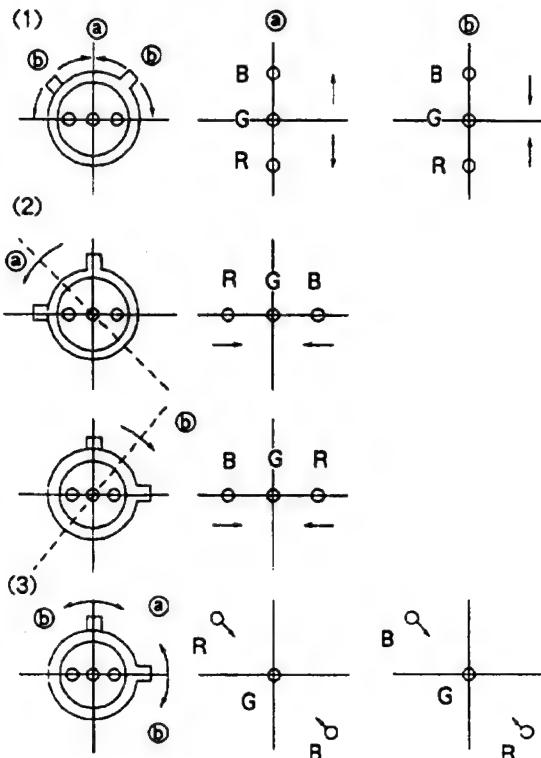
#### (1) Horizontal and Vertical Static Convergence



1. Adjust H.STAT VR to converge red, green and blue dots the in center of the screen.(Horizontal movement)
2. Adjust V. STAT magnet to converge red, green and blue dots in the center of the screen. (Vertical movement)
3. If the red, green and blue dots do not converge on the center of screen with H.STAT VR, perform horizontal convergence adjustment using H.STAT VR and V.STAT magnet as shown below. (In this case, H.STAT VR and V.STAT magnet effect each other.)
- Tilt the V.STAT magnet and adjust static convergence to open or close the V.STAT magnet.



4. When the V.STAT magnet is moved in the direction of arrow ① and ②, red, green and blue dots move as shown below.



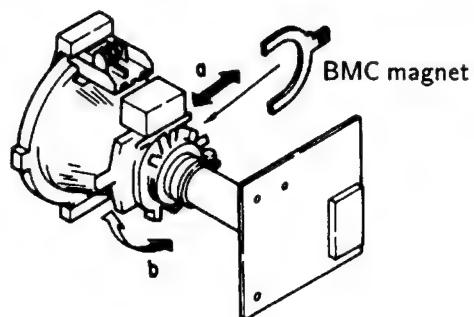
(21 inch only)

If the red and blue dot do not converge with green dots, perform following steps.

Move BMC magnet (a) to correct insufficient H.static convergence.

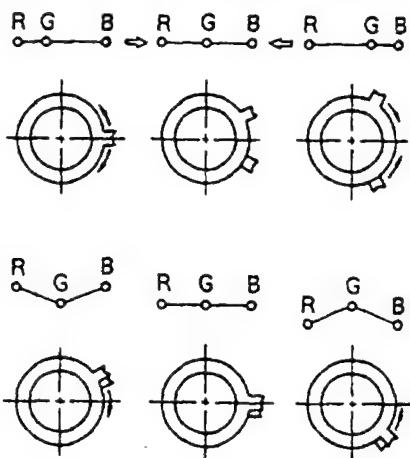
Rotate BMC magnet (b) to correct insufficient V.static convergence.

In either case, repeat Beam Landing Adjustment.

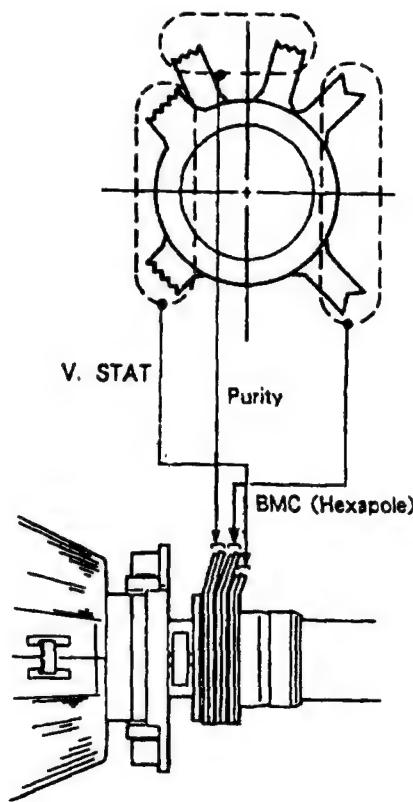


(25 inch only)

- Operation of BMC (Hexapole) Magnet



- The respective dot positions resulting from moving each magnet interact, so be sure to perform adjustment while tracking.  
Use the H.STAT VR to adjust the red, green, and blue dots so they coincide at the center of screen (by moving the dots in the horizontal direction).



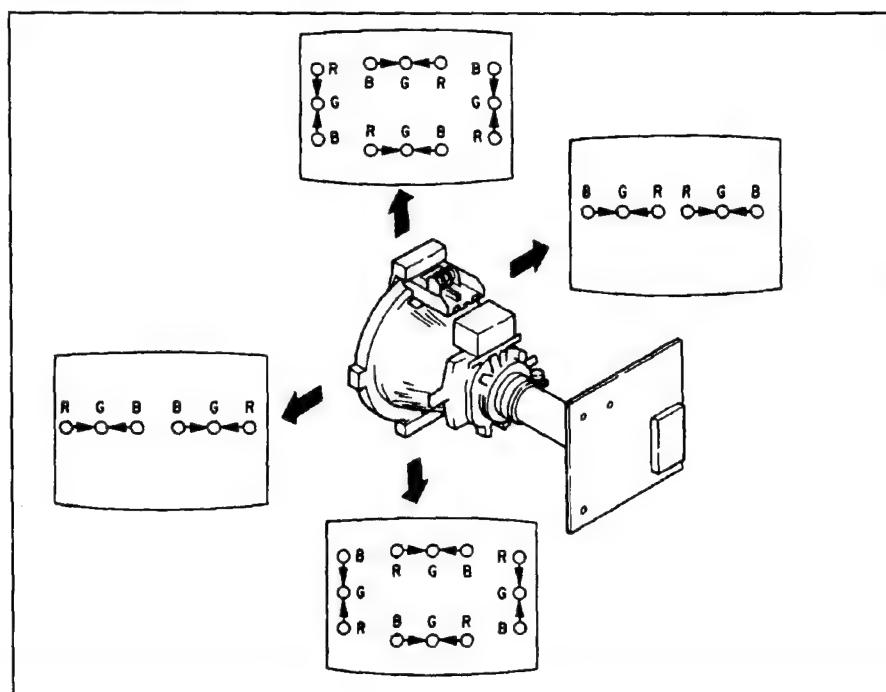
## (2) Dynamic Convergence Adjustment

### Preparation:

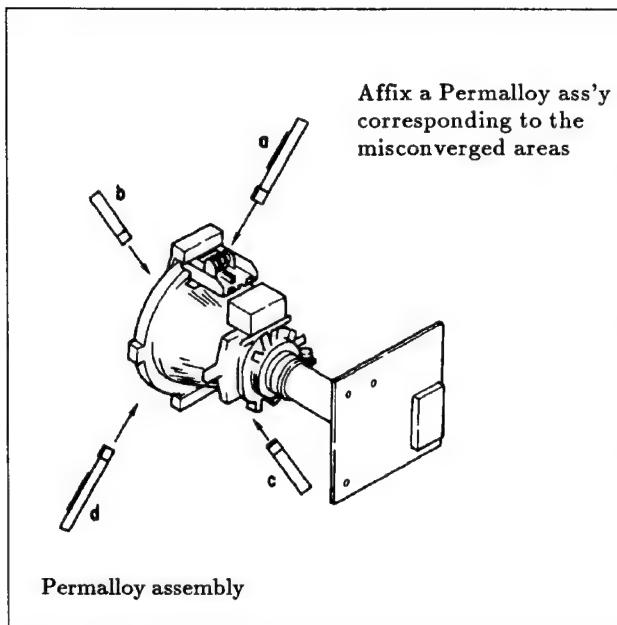
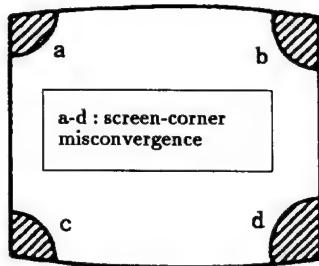
- Before starting perform Horizontal and Vertical static convergence Adjustment.

1. Slightly loosen deflection yoke screw.
2. Remove deflection yoke spacers.

3. Move the deflection yoke for best convergence as shown below.
4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.

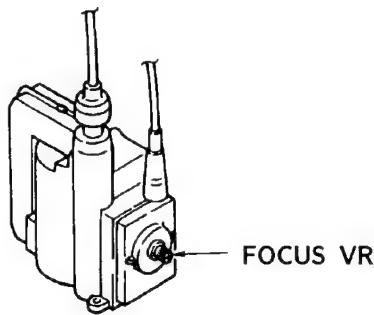


**(3) Screen-corner Convergence**

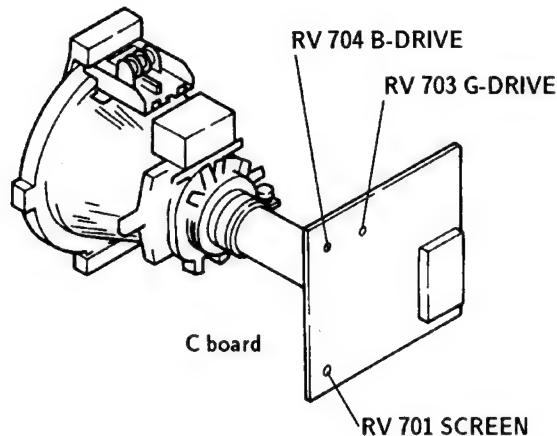


**3-3. FOCUS**

Adjust FOCUS so that the whole screen is in best focus.



**3-4. SCREEN (G 2) and WHITE BALANCE**



**Screen (G 2) Setting**

1. Input dot signal from the pattern generator.
2. Set the picture BRIGHTNESS control to minimum level.
3. Apply 170 V DC to the cathodes of R,G and B from an external power source.
4. While watching the picture, adjust the G2 SCREEN (RV701) immediately before fly-back line disappears.

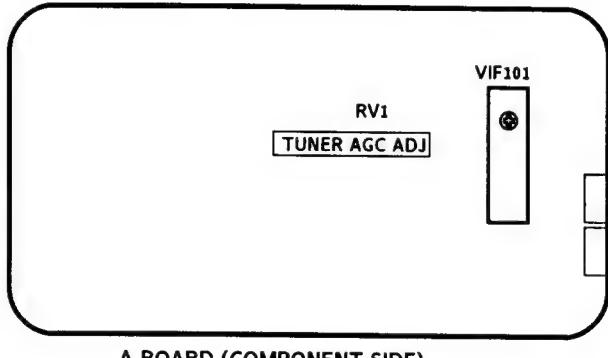
**White Balance Adjustment**

1. Input all-white signal from the pattern generator.
2. Adjust the BRIGHTNESS and COLOR controls to the standard level.
3. Adjust the following using RV 704 (B DRIVE) and RV 703 (G DRIVE)

In the following adjustments, the CONTRAST, COLOR and BRIGHTNESS controls are set to normal unless otherwise specified.

## SECTION 4 CIRCUIT ADJUSTMENTS

### 4-1. A BOARD ADJUSTMENTS

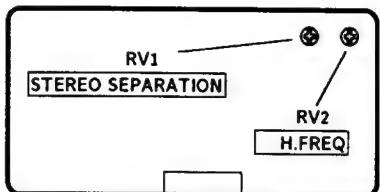


A BOARD (COMPONENT SIDE)

#### TUNER AGC ADJUSTMENT (VIF101, RV1)

1. Align with an appropriate signal between stations.
2. Adjust RV1 so that snow noise and cross modulation just disappear from the picture.

### IFG5.5S SIF



IFG5.5S SIF -component side-

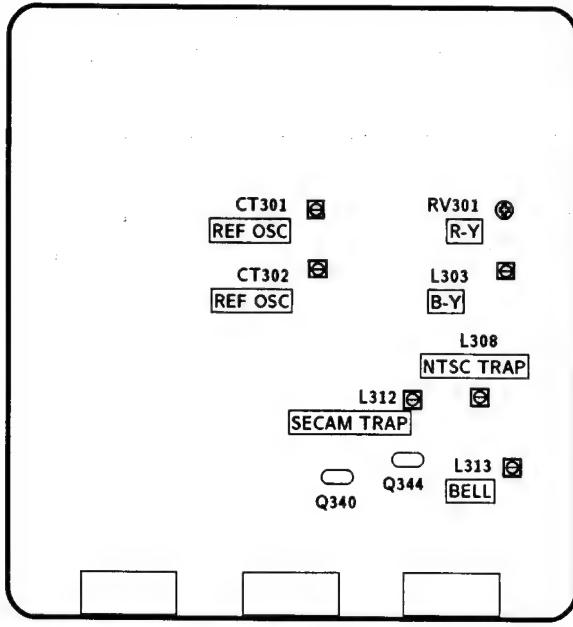
#### STEREO SEPALATION ADJUSTMENT (RV1)

1. Input stereo signals. (L-CH 400Hz, R-CH 1KHz)
2. Check the stereo indicator.
3. Connect on oscilloscope to pin⑧ (CH1) of CN1 through band pass filter of 1KHz
4. Adjust RV1 so that 1KHz voltage goes down to the minimum.

#### H FREQ (RV2)

1. Input a PAL COLOR BAR signal, then connect a jumper between pin⑫ IC4 and GND.
2. Connect a frequency counter to pin④ IFG5.5S (HP) of CN1 through a probe of 10 : 1.
3. Adjust RV2 (H.FREQ)  $15.625 \pm 50\text{Hz}$ .
4. After adjustment, remove the jamper.

### 4-2. B1 BOARD ADJUSTMENTS



B1 BOARD (COMPONENT SIDE)

#### REFERENCE OSCILLATOR ADJUSTMENT (CT302 8.8MHz)

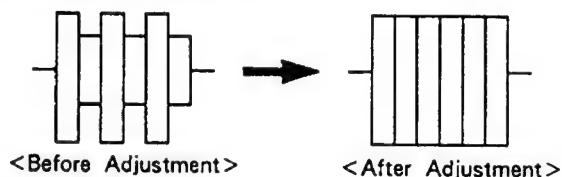
1. Input a PAL color bar signal.
2. Ground pin ⑯ of the IC304.
3. Adjust CT302 to obtain synchronization.

#### REFERENCE OSCILLATOR ADJUSTMENT (CT301 7.16MHz)

1. Input an NTSC color bar signal.
2. Ground pin ⑯ of IC304.
3. Adjust the CT301 to obtain synchronization.
4. Remove the jumper grounding pin ⑯ of IC304.

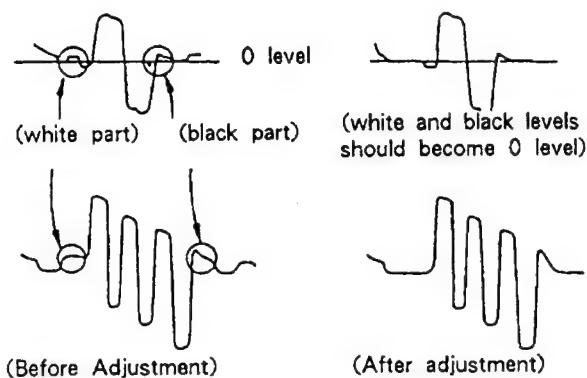
#### BELL FILTER ADJUSTMENT (L313)

1. Input a SECAM color bar signal.
2. Connect the oscilloscope to the emitter of Q344.
3. Adjust L313 so that the waveform is flat.



**DISCRIMINATION ADJUSTMENT  
(RV301 and L303)**

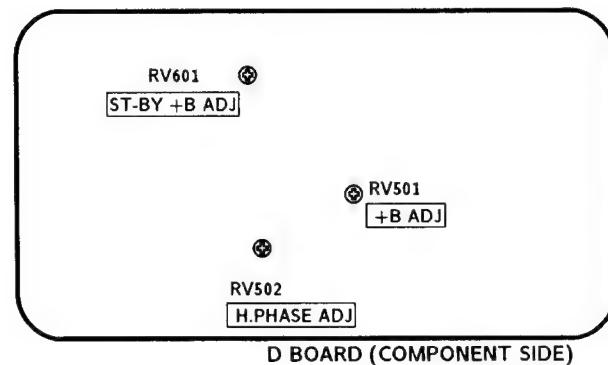
1. Input a SECAM color bar signal.
2. Connect the oscilloscope to pin ① of IC304.
3. Adjust RV301 until the white and black sections of the waveform at pin ① are at the 0 level. Connect the oscilloscope to pin ③ of IC304.
4. Adjust L303 until the white and black sections of the waveform at pin ③ are at the 0 level.

**SECAM TRAP (L312)**

1. Input a SECAM color bar signal.
2. Connect oscilloscope to Q340 emitter and adjust L312 to minimize color carrier on the Y-signal.

**NTSC TRAP (L308)**

1. Input a NTSC (3.58) color bar signal.
2. Connect oscilloscope to Q340 emitter and adjust L308 to minimize color carrier on the Y-signal.

**4-3. D BOARD ADJUSTMENTS****+B ADJUSTMENT (RV501)**

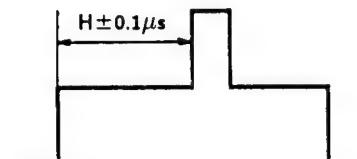
1. Connect the digital multimeter to TP91.
2. Adjust RV501 to obtain  $135 \pm 0.2V$ .

**ST-BY +B ADJUSTMENT (RV601)**

1. Put the system into  $\oplus$  standby mode (remote commander).
2. Connect the digital multimeter to TP91.
3. Adjust RV601 to obtain  $135 \pm 3V$ .
4. Take the system out of  $\oplus$  standby mode (remote commander).

**H.PHASE ADJUSTMENT (RV502)**

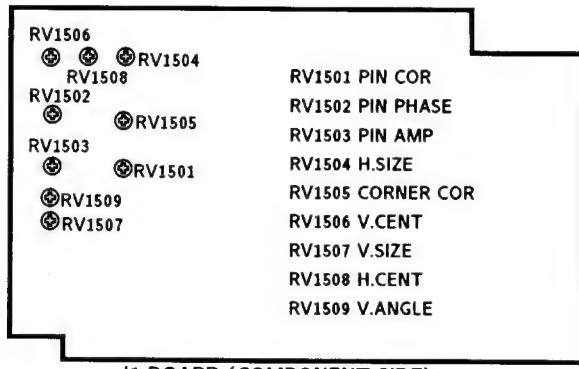
1. Input a PAL color bar signal.
2. Set the picture and brightness controls to their normal levels.
3. Set RV1508 (H.CENT) to its mechanical center.
4. Connect the oscilloscope to pin ⑪ (SCP) of IC 501.
5. Rotate RV502 to adjust to  $H \pm 0.1\mu s$ .



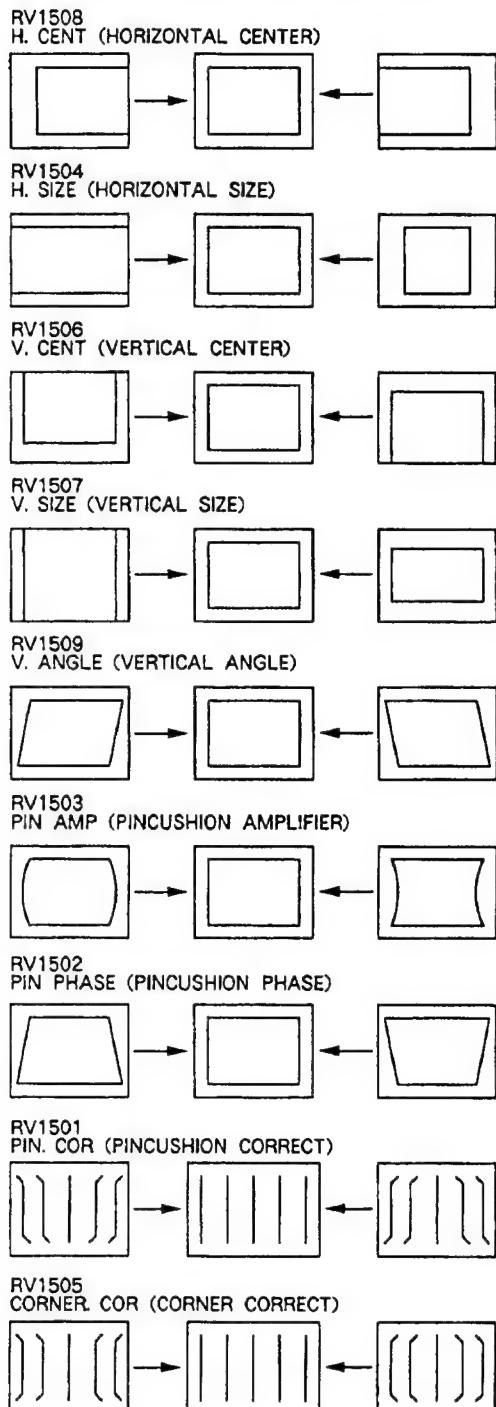
Standard of H. PHASE

Model Size	H
21 "	$5.6\mu s$
25 "	$5.1\mu s$

#### 4-4. J1 BOARD ADJUSTMENTS



J1 BOARD (COMPONENT SIDE)



#### 4-5. SECONDARY ADJUSTMENTS

##### SUB BRIGHTNESS ADJUSTMENT

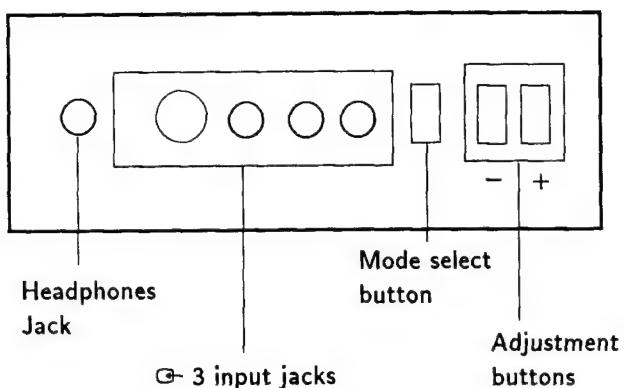
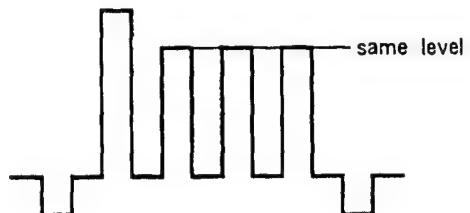
1. Set the system to receive a test pattern.
2. Press → • ← on the remote commander to put the system into normal mode.
3. Switch off the power.
4. While depressing the adjusting buttons + and - simultaneously, turn on the power. (SUB mode is obtained)
5. Minimize the ☰ contrast setting.
6. Adjust the ☷ brightness control so that the gray scale 0 IRE section is cut off completely and the 20 IRE section is barely glowing.
7. Depress the ◇ (store) button of the remote commander.  
(SUB mode is released)

If there is no test color pattern

1. Set the system to receive a color pattern.
2. Press → • ← on the remote commander to put the system into normal mode.
3. Set the ☰ color to its normal state.
4. Steps are the same as above.
5. Since 20 IRE is nearly blue, adjust the ☷ brightness control so that the blue barely glows.
6. Same as step 7 above.
7. Press → • ← on the remote commander to put the system into normal mode.

**SUB COLOR ADJUSTMENT**

1. Set the system to receive color bars.
2. Press  $\rightarrow \cdot \leftarrow$  on the remote commander to put the system into normal mode.
3. Cut off the power.
4. While depressing the adjustment buttons + and - simultaneously, turn on the power. (SUB mode is obtained).
5. Adjust the color control so that the B out waveform (pin ⑤ of C board connector CNC72) is as shown in the figure below.
6. Depress the  $\diamond$  (store) button of the remote commander. (SUB mode is released)



**KV-E2511D**  
**RM-689**

# SERVICE MANUAL

**AEP Model**  
Chassis No. SCC-C98B-A



## AE-1A CHASSIS

**Note:** The service manual for RM-689 has been issued separately.

### MODELS OF THE SAME SERIES

KV-E2511D	
KV-E2911D	

### SPECIFICATIONS

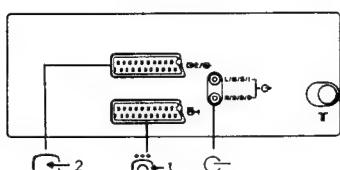
Television system	B/G/H
Color system	PAL, SECAM, NTSC 3.58, NTSC 4.43 (selected automatically)
Channel coverage	See »RECEIVABLE CHANNELS AND CHANNEL DISPLAYS«
Picture tube	Trinitron tube
	Approx. 63.5 cm (25 inches) (Approx. 59 cm picture measured diagonally) 110-degree deflection
Inputs	<input checked="" type="checkbox"/> 1 21-pin connector: CENELEC standard including RGB input. <input checked="" type="checkbox"/> 2 21-pin connector: including S video input <input checked="" type="checkbox"/> 3 4-pin DIN S video input connector Y: 1 Vp - p ± 3 dB 75 ohm    C: 0,3 Vp - p ± 3dB 75 ohms Audio input jacks: phono jack
Outputs	21-pin connector: CENELEC standard Headphones jack: stereo minijack External speaker terminals: 2-pin DIN Audio output jacks: phono jack (output dependent upon TV settings)
Sound output	30 W + 30 W (music power)
Power consumption	101 Wh
Dimensions not incl. speakers	Approx. 575 x 493 x 468.3 mm (w/h/d)
Dimensions incl. speakers	Approx. 756.6 x 493 x 468.3 mm
Weight not incl. speakers	Approx. 35.8 kg
Weight incl. speakers	Approx. 40.9 kg
Supplied accessories	RM-689 Remote Commander (1) IEC designation R 6 batteries (2) Detachable speakers (1 pair) Woofer (1)

Design and specifications are subject to change without notice.



**TRINITRON® COLOR TV**  
**SONY®**

## 21 pin connector (Pin 1, Pin 2)



Pin No	I	2	Signal	Signal level
1	○	○	Audio output B (right)	Standard level : 0.5Vrms Output impedance : Less than 1kohm*
2	○	○	Audio input B (right)	Standard level : 0.5Vrms Input impedance : More than 10kohms*
3	○	○	Audio output A (left)	Standard level : 0.5Vrms Output impedance : Less than 1kohm*
4	○	○	Ground (audio)	
5	○	○	Ground (blue)	
6	○	○	Audio input A (left)	Standard level : 0.5Vrms Input impedance : More than 10kohms*
7	○	●	Blue input	0.7V±3dB, 75ohms, positive
8	○	○	Function select (AV control)	High state (9.5–12 V) : Part mode Low state (0–2 V) : TV mode Input impedance : More than 10kohms Input capacitance : Less than 2 nF
9	○	○	Ground (green)	
10	○	○	Open	
11	○	●	Green	Green signal : 0.7V±3dB, 75ohms, positive
12	○	○	Open	
13	○	○	Ground (red)	
14	○	○	Ground (blanking)	
15	○	—	Red input	0.7V±3dB, 75ohms, positive
	—	○	(S signal) croma input	0.3V±3dB, 75ohms, positive
16	○	●	Blanking input (Ys signal)	High state (1–3 V) Low state (0–0.4 V) Input impedance : 75ohms
17	○	○	Ground (video output)	
18	○	○	Ground (video input)	
19	○	○	Video output	1V±3dB, 75ohms, positive Sync : 0.3V (-3, +10dB)
20	○	—	Video input	1V±3dB, 75ohms, positive Sync : 0.3V (-3, +10dB)
	—	○	Video Input/Y (S signal)	1V±3dB, 75ohms, positive Sync : 0.3V (-3, +10dB)
21	○	○	Common ground (plug, shield)	

○ connected

● unconnected (open)

\* at 20 Hz–20 kHz

## WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.  
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

## SAFETY-RELATED COMPONENT WARNING!!

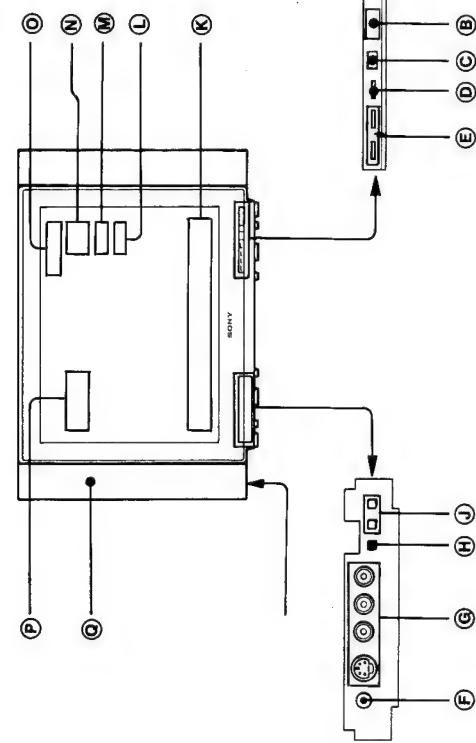
COMPONENTS IDENTIFIED BY SHADING AND MARK ON THE SCHEMATIC DIAGRAMS ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THE SERVICE MANUAL.  
CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THE SERVICE MANUAL PUBLISHED BY SONY.

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## 1-1. FUNCTION OF CONTROLS

# SECTION 1 GENERAL



### ON THE SET

**A** Power Switch ①

Use it to switch the set on and off. When you switch the set on, the programme number of the station tuned in will be indicated in the on-screen display (N) for some seconds. In case of short breaks of operation, you can switch the set on and off using the Remote Commander (See »CONTROLS ON THE REMOTE COMMANDER«).

**B** Remote control detector

(See »CONTROLS ON THE REMOTE COMMANDER«).

**C** Standby/Response indicator

This indicator lights up when the TV set is in standby mode and it flashes each time the set receives signals from the Remote Commander.

**D** Noise reduction indicator

This indicator lights up when noise reduction has been activated by pressing button ② on the Remote Commander.

**E** Stereo A/B indicators ③

During bilingual programmes one of the two indicators lights up, depending upon the selected channel A or B. When stereo programmes are broadcast both indicators light up. (See »CONTROLS ON THE REMOTE COMMANDER«).

**F** Jacks and control panel

The jacks and the control panel are situated behind a cover. Please press the arrow marking on the cover to open it.

**G** Headphones jack (stereo minijack)

Connect only stereo headphones.

**H** Input jacks

(Y/C input) connector (4-pin) ④-3  
Video input jack (phono jack) ⑤-3 (yellow)  
Audio input jacks (phono jacks) L/G/S/I and R/D/D/D ⑥-  
(red and white).

**I** Mode select button

Use this button to select either the programme tuning mode, volume adjustment ⑦ or the ⑧ input mode.

**J** Adjustment buttons +/–

Select at first the item to be adjusted using the Mode select button ⑨ (P (programme tuning mode), ⑩ (volume) or ⑪ (input mode), then adjust the item by pressing the + or – button.

You can also use these buttons to reset the picture and sound adjustments to the factory-set levels. For this purpose press both buttons simultaneously.

### On-screen display

When you press button ⑩ on the Remote Commander, the following information will be indicated on the screen:

**K** Picture and sound adjustment items:

① contrast, ② colour, ③ brightness, ④ hue (only for NTSC), ⑤ sharpness, ⑥ bass, ⑦ treble or ⑧ balance and the respective levels; as well as ⑨ mute, ⑩ reset, ⑪ space sound and ⑫ loudness indications, when the respective buttons are pressed.

When you press button ⑩ on the Remote Commander, the following information will be indicated on the screen:

**L** TV-System: B/G

**M** Channel number

**N** Programme number or input mode:

④-1, ④-2, ④-3 or ④-3;

**O** Indication of the station name

**P** AV output indication: ⑩, ⑪, ⑫ or **TV** ⑬ (see »CONTROLS ON THE REMOTE COMMANDER«).

**Q** Speakers

See »HOW TO ATTACH THE SPEAKERS«.

**R** Connectors on the rear

**S** Woofer

**T** Terminals for connecting the woofer

**U** Euro-AV-connector 21-pin ⑭-⑯  
For connecting a VTR, 8 mm video camera recorder, a video disc player or in general devices with an S-Video-output.

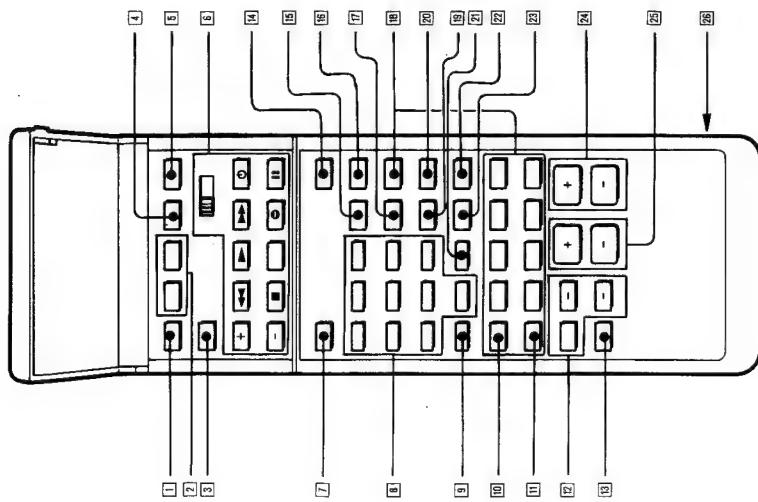
**V** Euro-AV-connector 21-pin ⑭-1

For connecting a VTR, a video disc player, a computer etc.

**W** Audio-output-jacks (phono jacks) ⑮-⑯

For connecting audio equipment, e.g. an amplifier, so that the sound will be output at the audio equipment. In this case the volume is adjustable on the TV set.

**X** Aerial terminal ⑰



4 ◇ **Store button:** Used for storing channels. See "TO PRESET CHANNELS".

5 ⊕ **TV-system-select-button**

This button has no function;

6 **Video selector and video operation buttons**  
Used for operating Sony video equipment. For details see "CONNECTING OTHER EQUIPMENT".

7 ☹ **Mute button**  
By pressing this button the sound of the set will be switched off and by pressing it once more the sound will be restored.

8 **Number buttons**

- a) Used to select programme positions or to input channel numbers (in the preset mode).
- b) If the set is in the standby mode, press one of the number buttons to switch it on.
- c) After pressing the Output select button ⑦ the buttons 1-3 can be used to select the different Output connectors.

9 -/+ Button  
In case of two digit numbers, press first this button and then the two respective number buttons ⑧.

10 ☺ **Button for On-screen display**  
By pressing this button information about the station tuned-in will be indicated on the screen. The indications will disappear after some seconds with the exception of the programme number, which will stay on the screen until the button is pressed once again.

11 **Time button** ☺  
In TV-mode: If teletext service is broadcast on the selected channel, press this button to display the current time on the screen and once again to make it disappear.

12 **+/- Buttons for picture and sound adjustments**

a) **TV-mode:**

The picture and sound adjustments are stored as standard values. You have, however, the possibility to change them to your individual liking. Press the button repeatedly until the required item is indicated in the on-screen display: ☺ contrast, ☺ colour, ☺ sharpness, ☺ bias, ☺ treble or ☺ balance. You can adjust the settings by pressing the + or - button.  
b) **Preset-mode:** Use these buttons to name a station. See "TO PRESET CHANNELS".

13 **... Reset-button**  
By pressing this button the picture and sound adjustments are reset to the factory-set levels.

14 **Standby-button**

Press this button to switch the set into standby-mode. You can switch it on again by pressing the TV-button ⑥ or one of the number buttons ⑧. To return to the teletext mode, press the ☺/⑩ button. There will be a slight delay before the picture is restored.

15 **C. button (Clear)**  
Used for clearing programme positions, so that the position will be skipped when the PROGR +/- buttons ⑪ are pressed. See "TO PRESET CHANNELS".

16 **PROGR +/- buttons**  
Use the Standby-button ⑤ only when switching the set off for a short period of time. If the set will not be used for a longer span of time, switch it off by using the Power switch A.

17 **Battery compartment (on the rear)**

18 **Note**  
Use the Standby-button ⑤ only when switching the set off for a short period of time. If the set will not be used for a longer span of time, switch it off by using the Power switch A.

15 ☺ **Input-Select-Button**

Press this button to select the audio- or video-signals input at the various input connectors. With each pressing of the button a different connector is selected. The following indications will appear sequentially:

⑨ 1 → ☺ (RGB) → ⑩ 2 → ☺ 3 → ⑪ 4 → ⑫ 5 → ⑬ 6 → ⑭ 7 → ⑮ 8 → ⑯ 9 → ⑰ 10 → ⑱ 11 → ⑲ 12 → ⑳ 13 → ⑳ 14 → ⑳ 15 → ⑳ 16 → ⑳ 17 → ⑳ 18 → ⑳ 19 → ⑳ 20 → ⑳ 21 → ⑳ 22 → ⑳ 23 → ⑳ 24 → ⑳ 25 → ⑳ 26 → ⑳ 27 → ⑳ 28 → ⑳ 29 → ⑳ 30 → ⑳ 31 → ⑳ 32 → ⑳ 33 → ⑳ 34 → ⑳ 35 → ⑳ 36 → ⑳ 37 → ⑳ 38 → ⑳ 39 → ⑳ 40 → ⑳ 41 → ⑳ 42 → ⑳ 43 → ⑳ 44 → ⑳ 45 → ⑳ 46 → ⑳ 47 → ⑳ 48 → ⑳ 49 → ⑳ 50 → ⑳ 51 → ⑳ 52 → ⑳ 53 → ⑳ 54 → ⑳ 55 → ⑳ 56 → ⑳ 57 → ⑳ 58 → ⑳ 59 → ⑳ 60 → ⑳ 61 → ⑳ 62 → ⑳ 63 → ⑳ 64 → ⑳ 65 → ⑳ 66 → ⑳ 67 → ⑳ 68 → ⑳ 69 → ⑳ 70 → ⑳ 71 → ⑳ 72 → ⑳ 73 → ⑳ 74 → ⑳ 75 → ⑳ 76 → ⑳ 77 → ⑳ 78 → ⑳ 79 → ⑳ 80 → ⑳ 81 → ⑳ 82 → ⑳ 83 → ⑳ 84 → ⑳ 85 → ⑳ 86 → ⑳ 87 → ⑳ 88 → ⑳ 89 → ⑳ 90 → ⑳ 91 → ⑳ 92 → ⑳ 93 → ⑳ 94 → ⑳ 95 → ⑳ 96 → ⑳ 97 → ⑳ 98 → ⑳ 99 → ⑳ 100 → ⑳ 101 → ⑳ 102 → ⑳ 103 → ⑳ 104 → ⑳ 105 → ⑳ 106 → ⑳ 107 → ⑳ 108 → ⑳ 109 → ⑳ 110 → ⑳ 111 → ⑳ 112 → ⑳ 113 → ⑳ 114 → ⑳ 115 → ⑳ 116 → ⑳ 117 → ⑳ 118 → ⑳ 119 → ⑳ 120 → ⑳ 121 → ⑳ 122 → ⑳ 123 → ⑳ 124 → ⑳ 125 → ⑳ 126 → ⑳ 127 → ⑳ 128 → ⑳ 129 → ⑳ 130 → ⑳ 131 → ⑳ 132 → ⑳ 133 → ⑳ 134 → ⑳ 135 → ⑳ 136 → ⑳ 137 → ⑳ 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763 → ⑳ 764 → ⑳ 765 → ⑳ 766 → ⑳ 767 → ⑳ 768 → ⑳ 769 → ⑳ 770 → ⑳ 771 → ⑳ 772 → ⑳ 773 → ⑳ 774 → ⑳ 775 → ⑳ 776 → ⑳ 777 → ⑳ 778 → ⑳ 779 → ⑳ 780 → ⑳ 781 → ⑳ 782 → ⑳ 783 → ⑳ 784 → ⑳ 785 → ⑳ 786 → ⑳ 787 → ⑳ 788 → ⑳ 789 → ⑳ 790 → ⑳ 791 → ⑳ 792 → ⑳ 793 → ⑳ 794 → ⑳ 795 → ⑳ 796 → ⑳ 797 → ⑳ 798 → ⑳ 799 → ⑳ 800 → ⑳ 801 → ⑳ 802 → ⑳ 803 → ⑳ 804 → ⑳ 805 → ⑳ 806 → ⑳ 807 → ⑳ 808 → ⑳ 809 → ⑳ 810 → ⑳ 811 → ⑳ 812 → ⑳ 813 → ⑳ 814 → ⑳ 815 → ⑳ 816 → ⑳ 817 → ⑳ 818 → ⑳ 819 → ⑳ 820 → ⑳ 821 → ⑳ 822 → ⑳ 823 → ⑳ 824 → ⑳ 825 → ⑳ 826 → ⑳ 827 → ⑳ 828 → ⑳ 829 → ⑳ 830 → ⑳ 831 → ⑳ 832 → ⑳ 833 → ⑳ 834 → ⑳ 835 → ⑳ 836 → ⑳ 837 → ⑳ 838 → ⑳ 839 → ⑳ 840 → ⑳ 841 → ⑳ 842 → ⑳ 843 → ⑳ 844 → ⑳ 845 → ⑳ 846 → ⑳ 847 → ⑳ 848 → ⑳ 849 → ⑳ 850 → ⑳ 851 → ⑳ 852 → ⑳ 853 → ⑳ 854 → ⑳ 855 → ⑳ 856 → ⑳ 857 → ⑳ 858 → ⑳ 859 → ⑳ 860 → ⑳ 861 → ⑳ 862 → ⑳ 863 → ⑳ 864 → ⑳ 865 → ⑳ 866 → ⑳ 867 → ⑳ 868 → ⑳ 869 → ⑳ 870 → ⑳ 871 → ⑳ 872 → ⑳ 873 → ⑳ 874 → ⑳ 875 → ⑳ 876 → ⑳ 877 → ⑳ 878 → ⑳ 879 → ⑳ 880 → ⑳ 881 → ⑳ 882 → ⑳ 883 → ⑳ 884 → ⑳ 885 → ⑳ 886 → ⑳ 887 → ⑳ 888 → ⑳ 889 → ⑳ 890 → ⑳ 891 → ⑳ 892 → ⑳ 893 → ⑳ 894 → ⑳ 895 → ⑳ 896 → ⑳ 897 → ⑳ 898 → ⑳ 899 → ⑳ 900 → ⑳ 901 → ⑳ 902 → ⑳ 903 → ⑳ 904 → ⑳ 905 → ⑳ 906 → ⑳ 907 → ⑳ 908 → ⑳ 909 → ⑳ 910 → ⑳ 911 → ⑳ 912 → ⑳ 913 → ⑳ 914 → ⑳ 915 → ⑳ 916 → ⑳ 917 → ⑳ 918 → ⑳ 919 → ⑳ 920 → ⑳ 921 → ⑳ 922 → ⑳ 923 → ⑳ 924 → ⑳ 925 → ⑳ 926 → ⑳ 927 → ⑳ 928 → ⑳ 929 → ⑳ 930 → ⑳ 931 → ⑳ 932 → ⑳ 933 → ⑳ 934 → ⑳ 935 → ⑳ 936 → ⑳ 937 → ⑳ 938 → ⑳ 939 → ⑳ 940 → ⑳ 941 → ⑳ 942 → ⑳ 943 → ⑳ 944 → ⑳ 945 → ⑳ 946 → ⑳ 947 → ⑳ 948 → ⑳ 949 → ⑳ 950 → ⑳ 951 → ⑳ 952 → ⑳ 953 → ⑳ 954 → ⑳ 955 → ⑳ 956 → ⑳ 957 → ⑳ 958 → ⑳ 959 → ⑳ 960 → ⑳ 961 → ⑳ 962 → ⑳ 963 → ⑳ 964 → ⑳ 965 → ⑳ 966 → ⑳ 967 → ⑳ 968 → ⑳ 969 → ⑳ 970 → ⑳ 971 → ⑳ 972 → ⑳ 973 → ⑳ 974 → ⑳ 975 → ⑳ 976 → ⑳ 977 → ⑳ 978 → ⑳ 979 → ⑳ 980 → ⑳ 981 → ⑳ 982 → ⑳ 983 → ⑳ 984 → ⑳ 985 → ⑳ 986 → ⑳ 987 → ⑳ 988 → ⑳ 989 → ⑳ 990 → ⑳ 991 → ⑳ 992 → ⑳ 993 → ⑳ 994 → ⑳ 995 → ⑳ 996 → ⑳ 997 → ⑳ 998 → ⑳ 999 → ⑳ 1000 → ⑳ 1001 → ⑳ 1002 → ⑳ 1003 → ⑳ 1004 → ⑳ 1005 → ⑳ 1006 → ⑳ 1007 → ⑳ 1008 → ⑳ 1009 → ⑳ 1010 → ⑳ 1011 → ⑳ 1012 → ⑳ 1013 → ⑳ 1014 → ⑳ 1015 → ⑳ 1016 → ⑳ 1017 → ⑳ 1018 → ⑳ 1019 → ⑳ 1020 → ⑳ 1021 → ⑳ 1022 → ⑳ 1023 → ⑳ 1024 → ⑳ 1025 → ⑳ 1026 → ⑳ 1027 → ⑳ 1028 → ⑳ 1029 → ⑳ 1030 → ⑳ 1031 → ⑳ 1032 → ⑳ 1033 → ⑳ 1034 → ⑳ 1035 → ⑳ 1036 → ⑳ 1037 → ⑳ 1038 → ⑳ 1039 → ⑳ 1040 → ⑳ 1041 → ⑳ 1042 → ⑳ 1043 → ⑳ 1044 → ⑳ 1045 → ⑳ 1046 → ⑳ 1047 → ⑳ 1048 → ⑳ 1049 → ⑳ 1050 → ⑳ 1051 → ⑳ 1052 → ⑳ 1053 → ⑳ 1054 → ⑳ 1055 → ⑳ 1056 → ⑳ 1057 → ⑳ 1058 → ⑳ 1059 → ⑳ 1060 → ⑳ 1061 → ⑳ 1062 → ⑳ 1063 → ⑳ 1064 → ⑳ 1065 → ⑳ 1066 → ⑳ 1067 → ⑳ 1068 → ⑳ 1069 → ⑳ 1070 → ⑳ 1071 → ⑳ 1072 → ⑳ 1073 → ⑳ 1074 → ⑳ 1075 → ⑳ 1076 → ⑳ 1077 → ⑳ 1078 → ⑳ 1079 → ⑳ 1080 → ⑳ 1081 → ⑳ 1082 → ⑳ 1083 → ⑳ 1084 → ⑳ 1085 → ⑳ 1086 → ⑳ 1087 → ⑳ 1088 → ⑳ 1089 → ⑳ 1090 → ⑳ 1091 → ⑳ 1092 → ⑳ 1093 → ⑳ 1094 → ⑳ 1095 → ⑳ 1096 → ⑳ 1097 → ⑳ 1098 → ⑳ 1099 → ⑳ 1100 → ⑳ 1101 → ⑳ 1102 → ⑳ 1103 → ⑳ 1104 → ⑳ 1105 → ⑳ 1106 → ⑳ 1107 → ⑳ 1108 → ⑳ 1109 → ⑳ 1110 → ⑳ 1111 → ⑳ 1112 → ⑳ 1113 → ⑳ 1114 → ⑳ 1115 → ⑳ 1116 → ⑳ 1117 → ⑳ 1118 → ⑳ 1119 → ⑳ 1120 → ⑳ 1121 → ⑳ 1122 → ⑳ 1123 → ⑳ 1124 → ⑳ 1125 → ⑳ 1126 → ⑳ 1127 → ⑳ 1128 → ⑳ 1129 → ⑳ 1130 → ⑳ 1131 → ⑳ 1132 → ⑳ 1133 → ⑳ 1134 → ⑳ 1135 → ⑳ 1136 → ⑳ 1137 → ⑳ 1138 → ⑳ 1139 → ⑳ 1140 → ⑳ 1141 → ⑳ 1142 → ⑳ 1143 → ⑳ 1144 → ⑳ 1145 → ⑳ 1146 → ⑳ 1147 → ⑳ 1148 → ⑳ 1149 → ⑳ 1150 → ⑳ 1151 → ⑳ 1152 → ⑳ 1153 → ⑳ 1154 → ⑳ 1155 → ⑳ 1156 → ⑳ 1157 → ⑳ 1158 → ⑳ 1159 → ⑳ 1160 → ⑳ 1161 → ⑳ 1162 → ⑳ 1163 → ⑳ 1164 → ⑳ 1165 → ⑳ 1166 → ⑳ 1167 → ⑳ 1168 → ⑳ 1169 → ⑳ 1170 → ⑳ 1171 → ⑳ 1172 → ⑳ 1173 → ⑳ 1174 → ⑳ 1175 → ⑳ 1176 → ⑳ 1177 → ⑳ 1178 → ⑳ 1179 → ⑳ 1180 → ⑳ 1181 → ⑳ 1182 → ⑳ 1183 → ⑳ 1184 → ⑳ 1185 → ⑳ 1186 → ⑳ 1

## 1-2. TO PRESET CHANNELS

Use the buttons on the Remote Commander for presetting.

In total there are 60 programme positions at your disposal for storing channels.

There are two different ways of tuning in channels:

### 1. Direct Channel Tuning

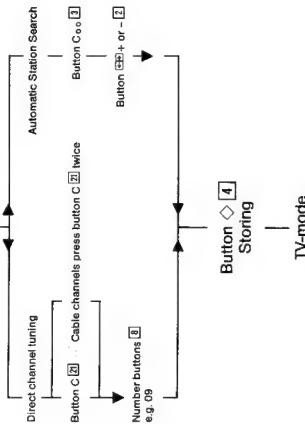
You know the channel number of a station and can input it directly.

### 2. Automatic Station Search

The set searches automatically for stations (including cable channels).

Button  $\rightarrow$  [1]

Select the programme position  
using the number buttons [8]



- 1. Direct Channel Tuning**
- Press the Preset button  $\rightarrow$  [1]. You are now in the preset mode of the set. The programme number in the on-screen display (N) starts blinking.

### 2. Automatic Station Search

- Press the Preset button  $\rightarrow$  [1]. You are now in the preset mode of the set. The programme number in the on-screen display (N) starts blinking.

- With the PROGR buttons +/– [2] or the number buttons [8] you can select the programme position. In case of two-digit numbers, press first the button +/– [2] and then the two number buttons.

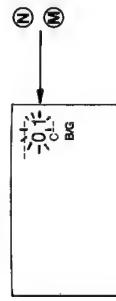
- If there is already a stored station on the selected programme position, press button C<sub>o</sub> [3].

- Press one of the tuning buttons  $\leftrightarrow$  +/– [2] to start the station search. The search will be interrupted as soon as a station is tuned in. Press the tuning buttons repeatedly until you find the desired station.

- If you have found the desired station, press button  $\diamond$  [4]. Now the selected station is stored and you are back in the TV-mode.

- If you want to store further stations, repeat the steps 1-5.

3. Press button C<sub>2</sub> [2]. The indication "C<sub>o</sub>" and the channel number start blinking in the display (N). Select the channel number with two digits (e.g. 04) using the number buttons [8].



## ADDITIONAL FUNCTIONS

### Skipping of unused programme positions

Using button C<sub>o</sub> [3] you have the possibility to have unused programme positions (e.g. without a stored station) skipped, when pressing the buttons PROGR +/– [2] on the Remote Commander.

- Press button  $\rightarrow$  [1]. You are now in the preset mode of the set.

- Use the buttons PROGR +/– [2] to select the programme position, which you want to have skipped.

- Press button C<sub>o</sub> [3].

- Press button  $\diamond$  [4] to store the cleared programme position and to return to the TV-mode.

- Press the number buttons [8] on the Remote Commander.

- The skipped programme positions still appear when you press the number buttons [8].

- If you want to name a station  
After presetting the stations you have the possibility to name them. The selected name will appear in the on-screen display (O).

- Press the preset button  $\rightarrow$  [1].

- Press the button  $\odot$  [2]. The first column of the station name starts blinking. Press either button + or – [2] and select the desired character (number or letter, 0-9, A-Z, -for a blank column).

- Press button  $\odot$  [2] again. Now the second column starts blinking and you can select the second character. In this way five characters can be selected.

- Press button  $\diamond$  [4] to store the station name.

If you want to store further channels, repeat the steps 1 to 4.

### 2. Automatic Station Search

- Press button  $\rightarrow$  [1]. You are now in the preset mode of the set. The programme number in the on-screen display (N) starts blinking.

- With the PROGR buttons +/– [2] or the number buttons [8] you can select the programme position. In case of two-digit numbers, press first button -/– [2] and then the two number buttons.

- If there is already a stored station on the selected programme position, press button C<sub>o</sub> [3].

- Press one of the tuning buttons  $\leftrightarrow$  +/– [2] to start the station search. The search will be interrupted as soon as a station is tuned in. Press the tuning buttons repeatedly until you find the desired station.

- If you have found the desired station, press button  $\diamond$  [4]. Now the selected station is stored and you are back in the TV-mode.

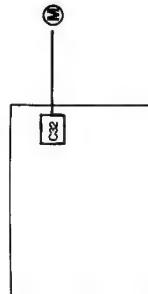
- If you want to store further stations, repeat the steps 1-5.

### Direct Channel Tuning in the TV-mode

You have the possibility to tune in channels directly when you are in the TV-mode without storing these channels. Example: You tune in channel number 32. If you switch the set off or change the programme position, this channel will be cancelled.

- Press the button C<sub>2</sub> [2]. In the display (N) the indication "C<sub>o</sub>" will appear. For cable channels press the button C<sub>2</sub> [2] twice. On the screen "S" will be displayed.

- Select the channel number with two digits using the number buttons [8] (e.g. for channel 4 press first 0, then 4). The indication on the screen will disappear within some seconds.



### Manual Fine Tuning

If the reception of a channel is not satisfactory, you have the possibility to deactivate the Automatic Fine Tuning, which is usually in operation during presetting in order to tune in the best possible picture.

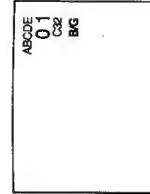
Press one of the tuning buttons  $\leftrightarrow$  +/– [2] to fine-tune a channel. The Automatic Fine Tuning will be restored when the respective programme position is pressed once again.

### Auto shut-off-Function

The TV set automatically goes into standby-mode some time after the transmission on a channel is finished.

### Notes

- If you press the preset button  $\rightarrow$  [1] instead of button  $\odot$  [2] the set will return to the TV-mode without storing the channels.
- If you press a wrong programme or a channel number, an "xx" will be displayed on the screen.
- When pressing two number buttons, the second number button should be pressed within 5 seconds after the first one, otherwise the operation will be cancelled.



## 1-3. VIEWING TELETEXT

To view the teletext service, use the Remote Commander.  
The buttons for teletext operation are indicated in green.

### Operation

- 1 Select the TV channel for the desired teletext service. When the signal is weak, teletext errors often occur.
  - 2 Press  $\text{[} \text{HOLD} \text{]} \text{ (TEXT/MIX)}$ .
  - 3 Key in the three digits of the desired page using the number buttons. If an error is made complete the three-digit sequence by keying in any digit. Then, re-enter the correct page number.
- The requested teletext page is displayed.

To return to the TV mode, press TV on the Remote Commander.

### To view the input picture

Press the  $\text{[} \text{IS} \text{]} \text{ button}$  repeatedly until the desired input signal indication appears on the screen.

The teletext service can be displayed directly from the standby mode by pressing  $\text{[} \text{P} \text{]} \text{ (TEXT/MIX)}$ .

#### To receive the teletext service of a different TV channel

- 1 Press TV to return to the TV mode.
- 2 Select the desired TV channel.
- 3 Press  $\text{[} \text{P} \text{]} \text{ (TEXT/MIX)}$ .

**Note**

Buttons not referred to in the text do not operate.

### To request the index page

Press  $\text{[} \text{INDEX} \text{]}$ . If the necessary signal is not being broadcast, page 100 is displayed.

### To access the next or preceding page

Press  $\text{[} \text{PAGE +} \text{]} \text{ or } \text{[} \text{PAGE -} \text{]}$ .

### To superimpose the teletext display on the picture

Press  $\text{[} \text{P} \text{]} \text{ twice from the TV mode.}$   
Press  $\text{[} \text{P} \text{]} \text{ again to return to the TEXT display.}$

### To suppress the teletext display so that the TV picture is displayed

Press  $\text{[} \text{HOLD} \text{]} \text{ (TEXT CL).}$  The HOLD symbol appears on the screen. To resume normal teletext reception, press  $\text{[} \text{P} \text{]} \text{ (TEXT/MIX).}$

### To prevent a teletext page from being updated/changed

Press  $\text{[} \text{HOLD} \text{]} \text{ (TEXT CL).}$  At the requested time, press  $\text{[} \text{P} \text{]} \text{ (TP ON).}$  "T\*\*\*" will appear at the bottom of the screen.

### To reveal concealed information such as answers to a quiz

Press  $\text{[} \text{REVEAL} \text{]} \text{ (REVEAL).}$  Press again to conceal the answers.

### To operate a Sony video equipment

The video operation buttons  $\text{[} \text{1} \text{]} \text{ to } \text{[} \text{6} \text{]}$  on the Remote Commander can operate the VTRs and video disc players manufactured by Sony.

#### 1. Switch the video selector to the desired position.

**VIDEO 1:** to operate Sony Betamax VTR and SLV 202 VHS.

**VIDEO 2:** to operate Sony 8mm VTR.

**VIDEO 3:** to operate Sony VHS VTR.

**MDP:** to operate Sony video disc player including a multi disc player.

#### 2. Press the operation button(s) to start operation.

**PROGR +/ -:** to select the desired programme on the VTR.

$\text{[} \text{A} \text{]} \text{ :}$  to rewind the tape or to rapidly go back to the desired position on the disc.

$\text{[} \text{B} \text{]} \text{ :}$  to start playback

$\text{[} \text{C} \text{]} \text{ :}$  to advance the tape or the disc rapidly to the desired position

$\text{[} \text{D} \text{]} \text{ :}$  to stop the tape or the disc, or to release the pause mode

$\text{[} \text{E} \text{]} \text{ :}$  to start recording on the VTR

$\text{[} \text{F} \text{]} \text{ :}$  Be sure to press this button and the one on the left simultaneously

$\text{[} \text{G} \text{]} \text{ :}$  to switch the video equipment on and off

#### 3. Press the $\text{[} \text{IS} \text{]} \text{ button}$ to be output from the $\text{[} \text{2/6} \text{]} \text{ connector}$

Press the  $\text{[} \text{IS} \text{]} \text{ button}$ , then 1, 2, 3 or the TV-button  $\text{[} \text{1} \text{]}$  while  $\text{[} \text{IS} \text{]} \text{ is displayed, so that one of the following indications is displayed:}$

$\text{[} \text{1} \text{]} \text{ :}$  The audio and video signal input through the  $\text{[} \text{2/6} \text{]} \text{ connector is output from the }$   $\text{[} \text{2/6} \text{]} \text{ connector.$

$\text{[} \text{2} \text{]} \text{ :}$  The audio and video signal input through the  $\text{[} \text{2/6} \text{]} \text{ connector is output from the }$   $\text{[} \text{2/6} \text{]} \text{ connector.$

$\text{[} \text{3} \text{]} \text{ :}$  The audio and video signal input through the  $\text{[} \text{2/6} \text{]} \text{ connector is output from the }$   $\text{[} \text{2/6} \text{]} \text{ connector.$

$\text{[} \text{4} \text{]} \text{ :}$  The audio and video signal input through the  $\text{[} \text{2/6} \text{]} \text{ connector is output from the }$   $\text{[} \text{2/6} \text{]} \text{ connector.$

$\text{[} \text{5} \text{]} \text{ :}$  The indication will disappear after a few seconds.

### Note

The TV-signal is always output at the EURO-AV connector  $\text{[} \text{5} \text{]} \text{ - 1.}$

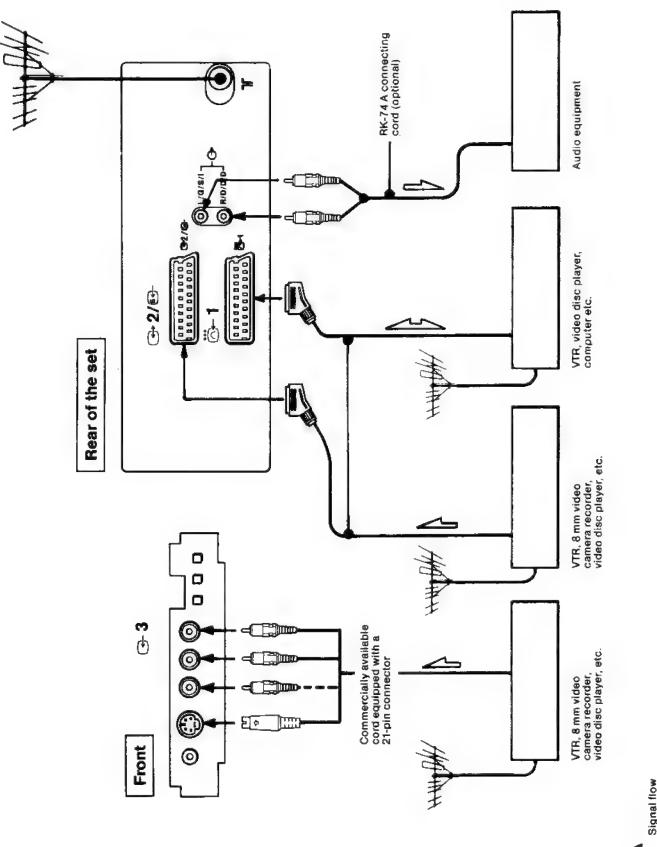
To watch the TV programme until the requested time, press  $\text{[} \text{TP} \text{]} \text{ (TEXT CL).}$  At the requested time, the page number will be displayed at the bottom of the screen.

To view this page, press  $\text{[} \text{P} \text{]} \text{ (P).}$

To cancel the request, first ensure that the teletext page is displayed, then press  $\text{[} \text{TP OFF} \text{]} \text{ (TP OFF).}$

## 1.4. CONNECTING OTHER EQUIPMENT

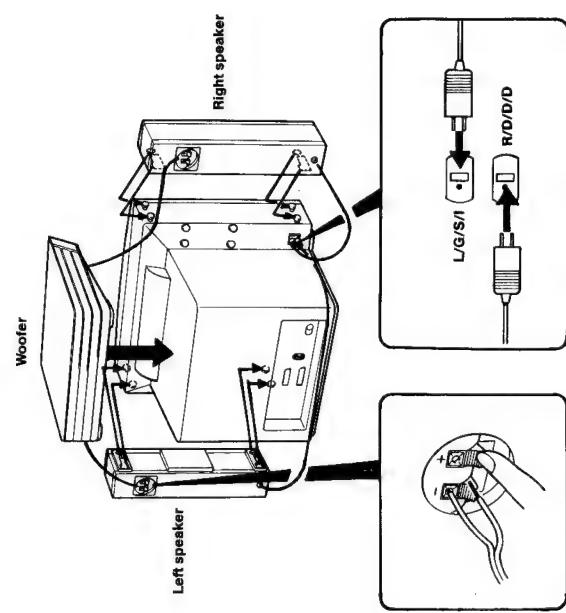
## 1.5. HOW TO ATTACH THE SPEAKERS



KV-E 2511D	
1	Place the woofer on the rear cover of the set.
2	Attach the right and left speakers on the sides of the set.
3	Connect the speaker cords of the woofer to the speaker terminals on the right and left speakers: connect the black cord to the - (black) terminal and the black and white cord to the + (red) terminal.
4	Connect the left speaker cord to the L/G/S/I terminal and the right speaker cord to the R/D/D terminal on the rear of the TV set.

**Note**

Make sure that the set is turned off when you install the speakers.



**S video input (Y/C Input)** Video signals may be separated into Y (luminance or brightness) and C (chrominance) signals. Usually these two signals are combined in a VTR and output as one signal, and supplied to a TV. Separation of the Y and C signals prevent them from interfering with one another, thereby improving picture quality (especially in luminance). This set is equipped with two S video input jacks through which these separated signals can be input directly. Connect one of the two S video output jacks on the VTR to the S video input on this set.

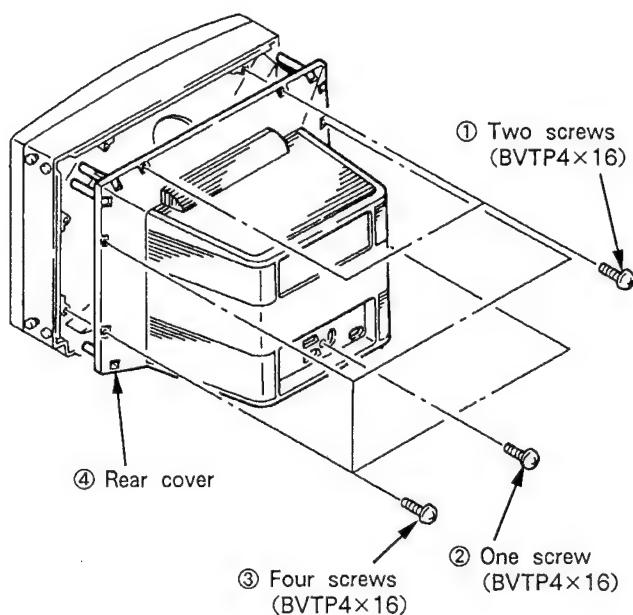
- Connect the S video output of the VTR, etc. here.
- \*\* To connect S video connectors (4-pin DIN), use an optional YC-15/YC-15 EV connecting cable.

**Notes**

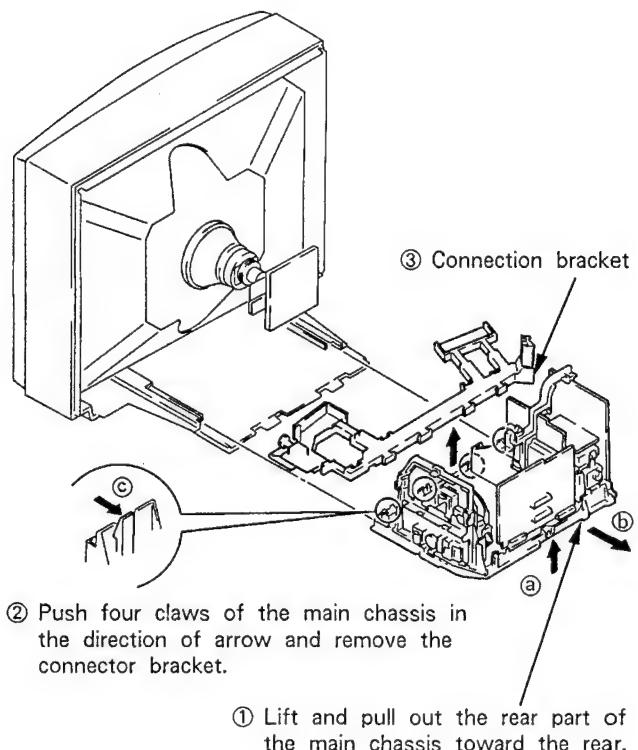
- It is also possible to connect a VTR using the " " terminal. In this case, connect the aerial to the aerial terminal of the VTR.
- Move the VTR away from the TV if the picture or the sound is distorted.
- Computers which have RGB output only can be connected to the " " 1 input connector.

## SECTION 2 DISASSEMBLY

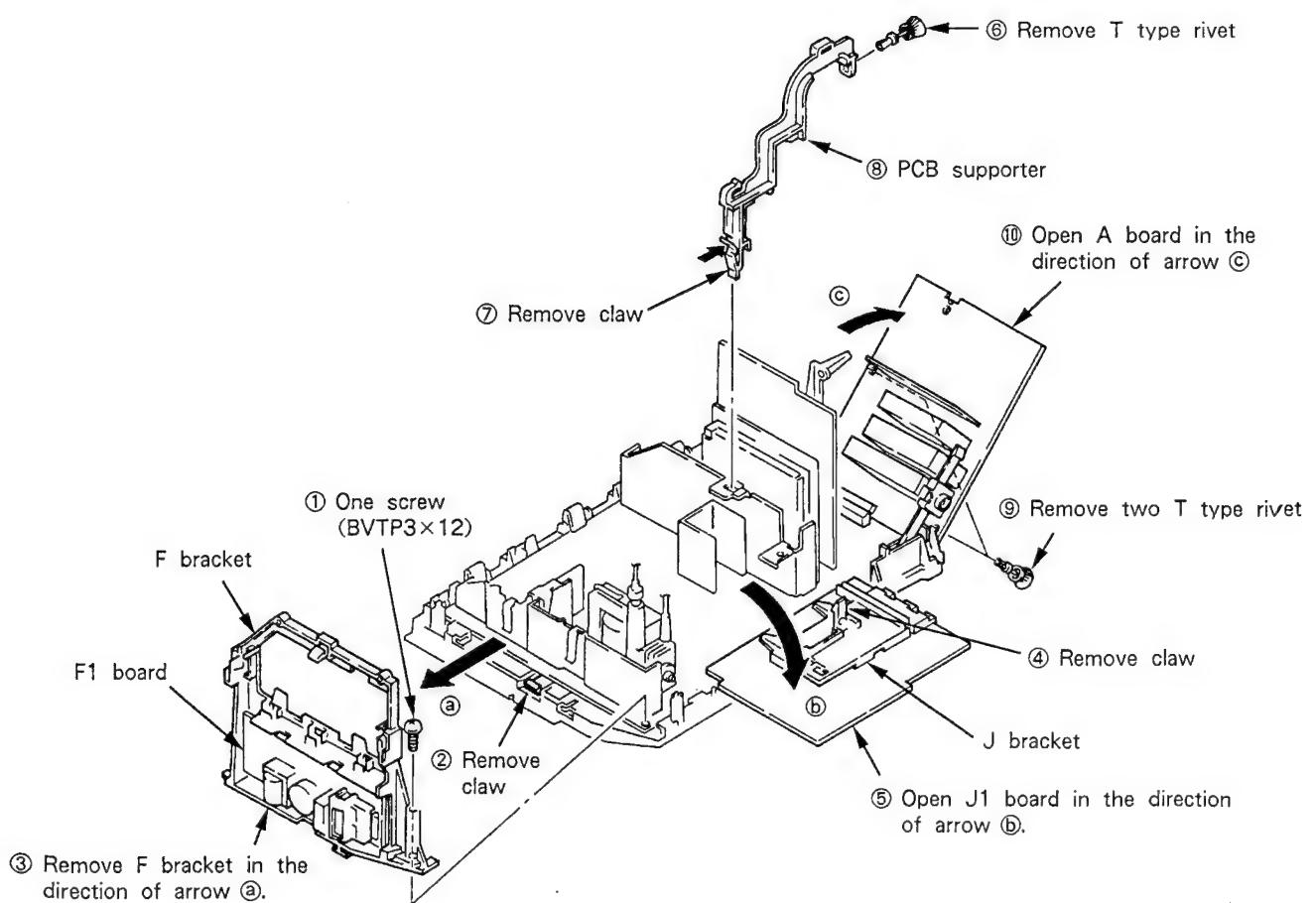
### 2-1. REAR COVER REMOVAL



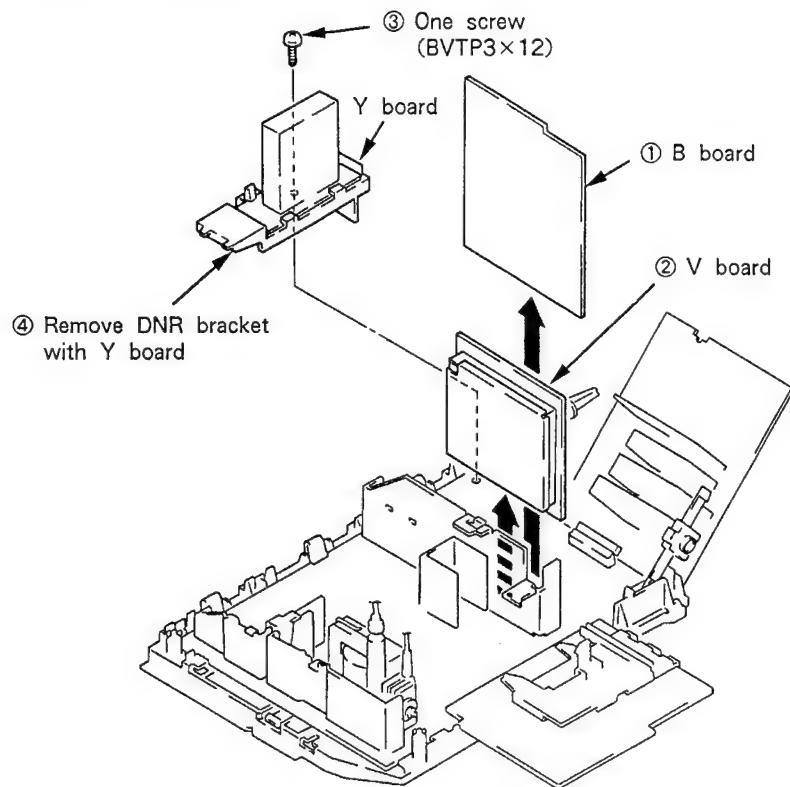
### 2-2. CHASSIS ASSY REMOVAL



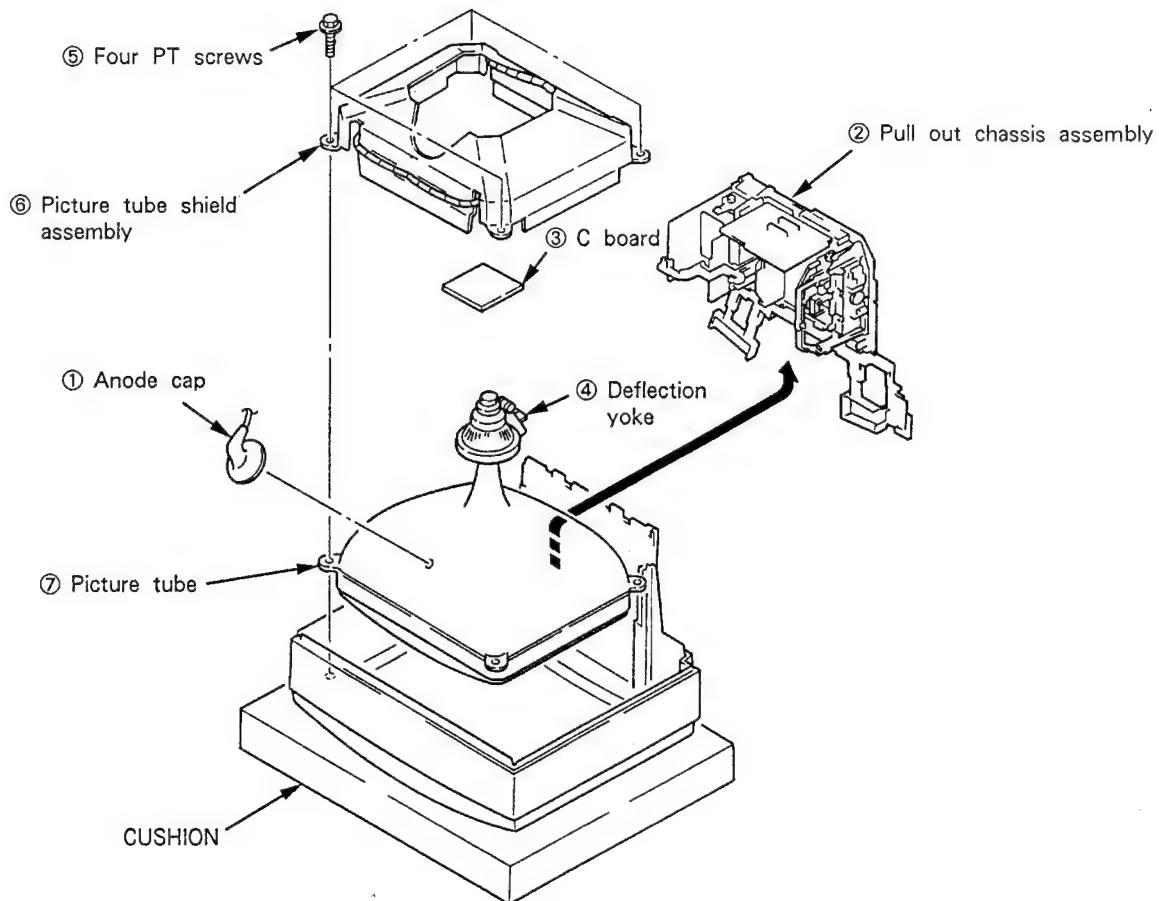
### 2-3. A, J1 BOARDS OPENING AND F1 BOARD REMOVAL



**2-4. V, B AND Y BOARDS REMOVAL**

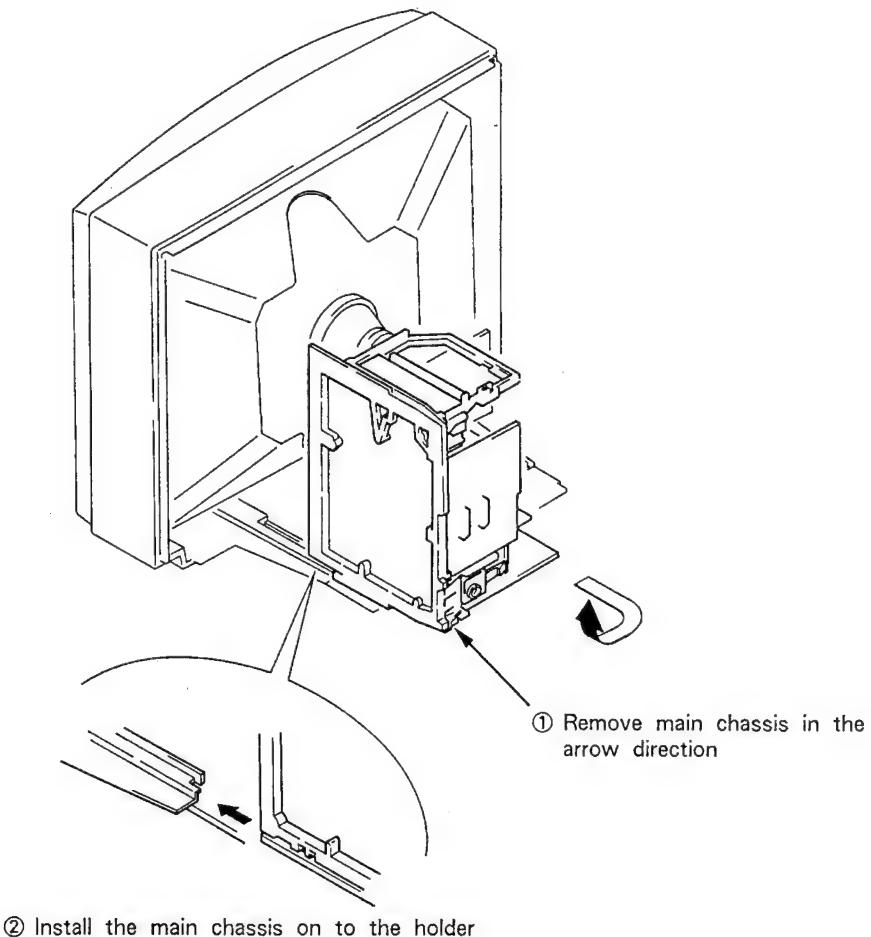


**2-5. PICTURE TUBE REMOVAL**

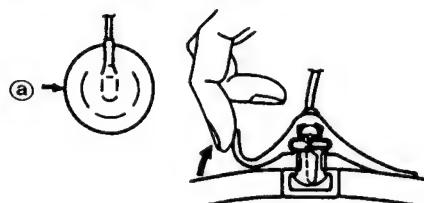


## 2-6. SERVICE POSITION

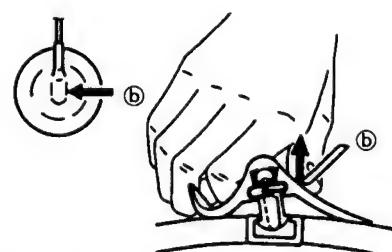
\* Remove the connector bracket and then perform the following servicing (refer to 2-2, CHASSIS ASSEMBLY REMOVAL).



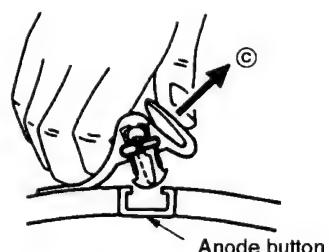
- REMOVAL OF ANODE-CAP
- REMOVING PROCEDURES



① Turn up one side of the rubber cap in the direction indicated by the arrow ④.



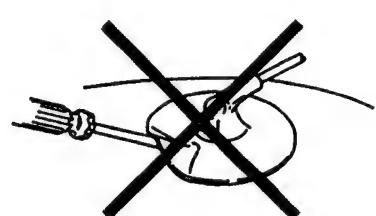
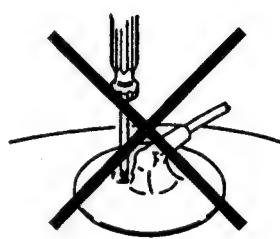
② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⑤.



③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⑥.

- HOW TO HANDLE AN ANODE-CAP

- ① Don't hurt the surface of anode-caps with sharp shaped material !
- ② Don't press the rubber hardly not to hurt inside of anode-caps !  
A metal fitting called as shatter-hook terminal is built in the rubber.
- ③ Don't turn the foot of rubber over hardly !  
The shatter-hook terminal will stick out or hurt the rubber.



## SECTION 3

### SET-UP ADJUSTMENTS

- When complete readjustment is necessary or a new receiver tube is installed, carry out the following adjustments.
- Unless there is specific instruction to the contrary, carry out these adjustments with the rated power supply.

Unless there is specific instruction to the contrary, set the controls and switches this way :

- |                    |                               |
|--------------------|-------------------------------|
| ● Contrast.....    | 80%                           |
|                    | (or remote control<br>normal) |
| ○ Brightness ..... | 50%                           |

Carry out the following adjustments in this order :

1. Beam landing
2. Convergence
3. Focus
4. White balance

**Note :** Testing equipment required

1. Color bar/pattern generator
2. Degausser
3. DC power supply
4. Digital multimeter
5. Oscilloscope

#### Preparations

- In order to reduce the influence of geomagnetism on the set's PICTURE TUBE face it east or west.
- Switch on the set's power and degauss with the degausser.

#### 3-1. BEAM LANDING

1. Input the raster signal with the pattern generator.  
Contrast ..... normale  
Brightness
2. Set the pattern generator raster signal to red.
3. Move the deflection yoke to the rear and adjust with the purity control so that the red is at the center and the blue and the green take up equally sized areas on each side. (See Figures 3-1 through 3-3)
4. Move the deflection yoke forward and adjust so that entire screen is red. (See Figure 3-1)
5. Switch the raster signal to blue, then to green and verify the condition.
6. When the position of the deflection yoke has been decided, fasten the deflection yoke with the screws.
7. If the beam does not land correctly in all the corners, use a magnet to adjust it. (See Figure 3-4)

purity control

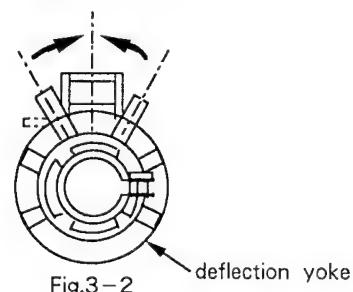


Fig.3-2

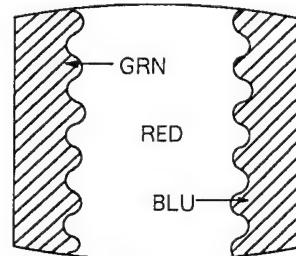


Fig.3-3

Disk magnets or  
rotatable disk  
magnets correct  
these areas (a-d).

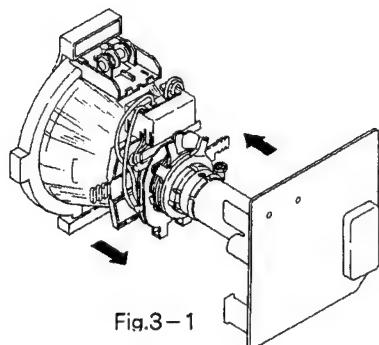
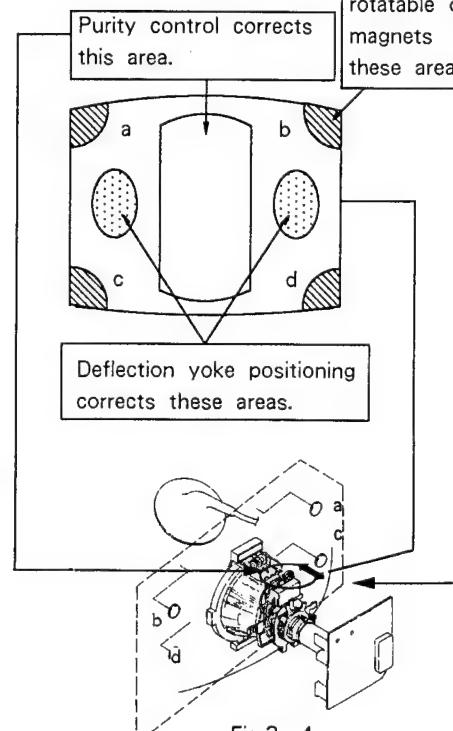


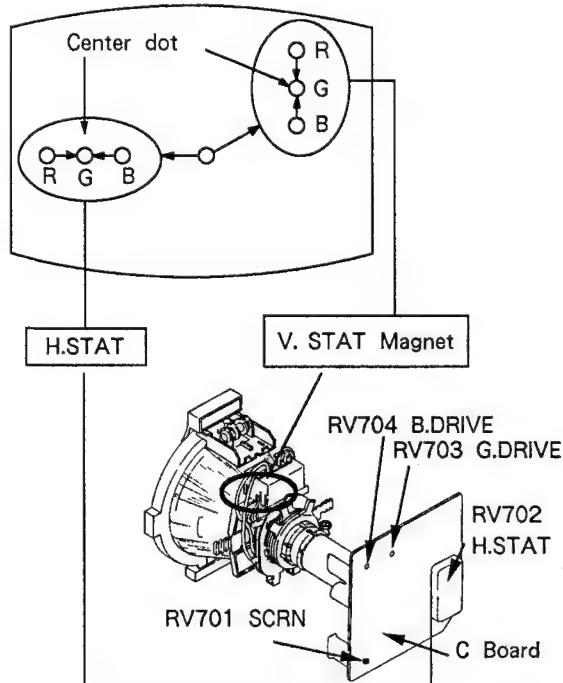
Fig.3-1

### 3-2. CONVERGENCE

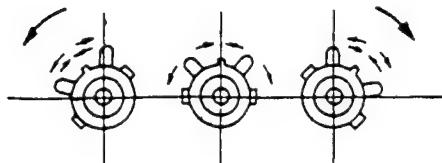
#### Preparations :

- Before starting this adjustment, adjust the focus, horizontal size, and vertical size.
- Minimize the brightness setting.
- Provide a dot pattern.

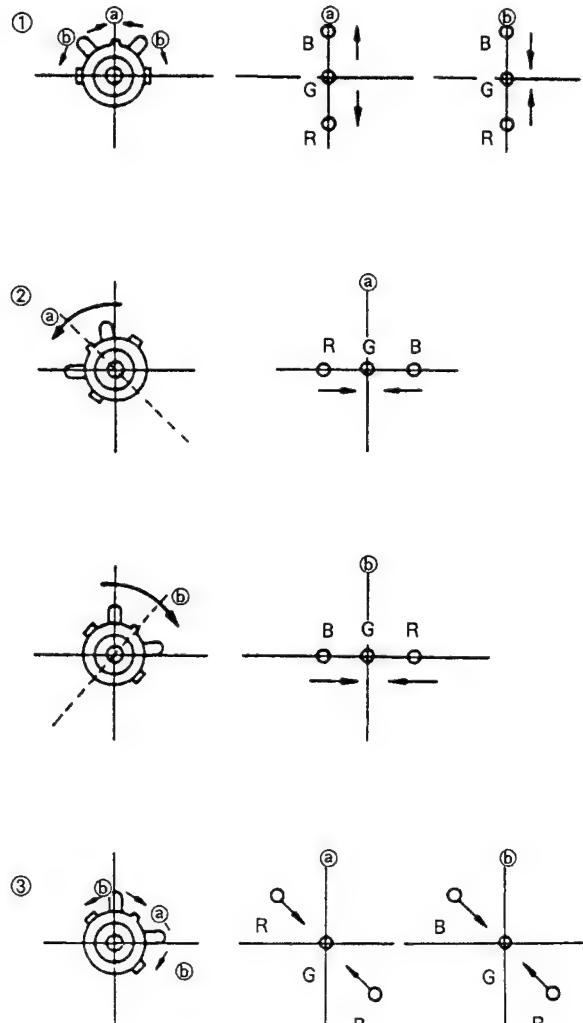
#### (1) Horizontal and vertical static convergence



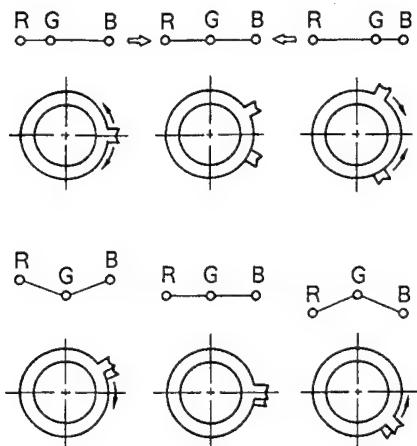
1. (Moving horizontally), adjust the H.STAT control so that the red, green, and blue points are on top of each other at the center of the screen.
2. (Moving vertically), adjust the V.STAT magnet so that the red, green, and blue points are on top of each other at the center of the screen.
3. If the H.STAT variable resistor can not bring the red, green, and blue points together at the center of the screen, adjust the horizontal convergence with the H.STAT variable resistor and the V.STAT magnet in the manner given below.  
(In this case, the H.STAT variable resistor and the V.STAT magnet influence each other's settings.)
- Tilt the V.STAT magnet and adjust the static convergence by opening or closing the V.STAT magnet.



4. If the V.STAT magnet is moved in the direction of the ④ and ⑤ arrows, the red, green, and blue points move as shown below.

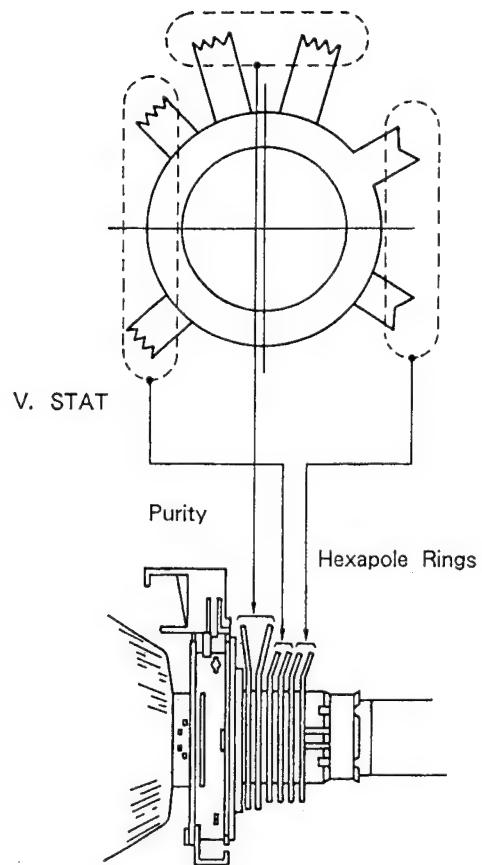


● Operation of Hexapole Ringed Magnet



The respective dot operations resulting from the operation of each magnet are not completely independent, so be sure to perform adjustment while tracking.

Use the H. STAT VR to adjust the red, green, and blue dots so they coincide at the center of screen (by moving the dots in the horizontal direction).



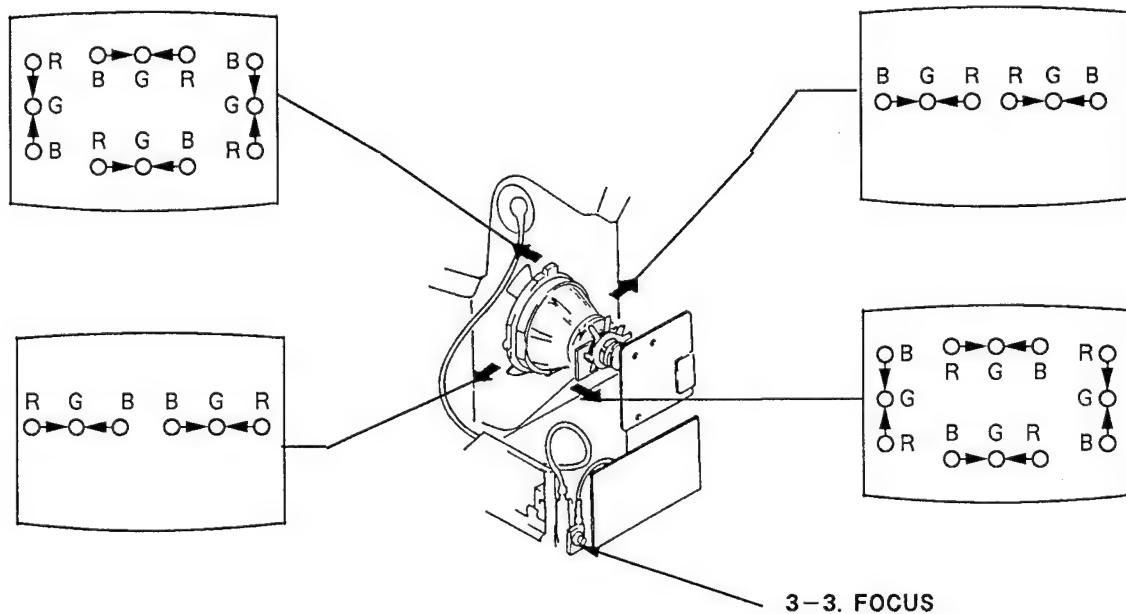
(2) Dynamic convergence adjustment

Preparations

- Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence.

  1. Slightly loosen the deflection yoke screws.
  2. Remove the deflection yoke spacer.

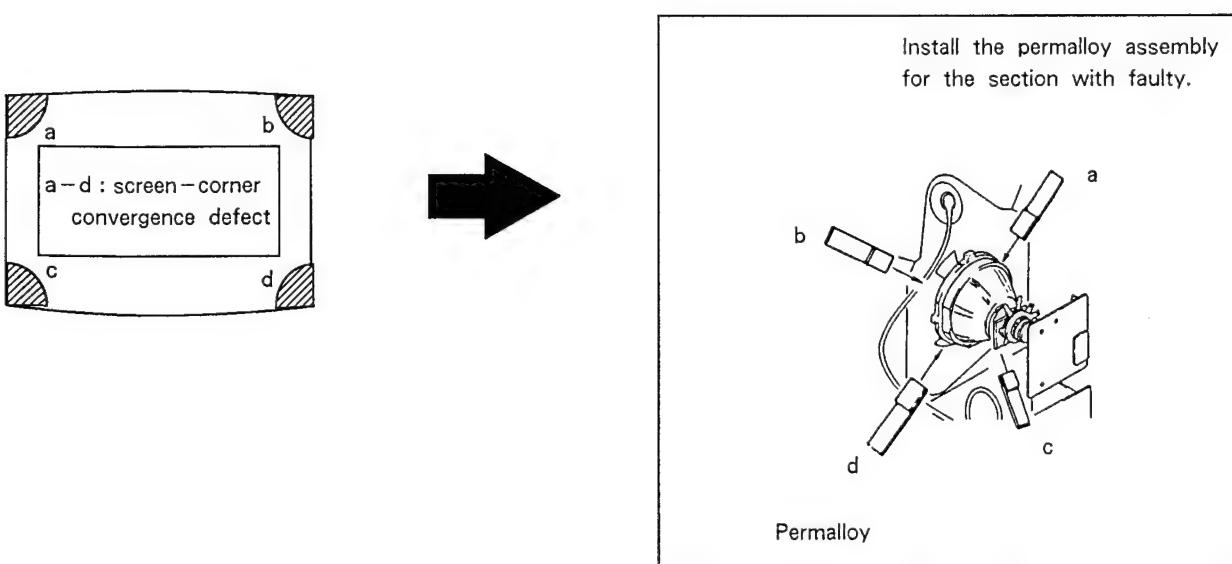
3. Move the deflection yoke as shown in the figure below and optimize the convergence.
4. Tighten the deflection yoke screws.
5. Install the deflection yoke spacer.



**3-3. FOCUS**

Adjust the focus to optimize the screen.

(3) Screen corner convergence



### 3-4. WHITE BALANCE

[Screen G2 setting]

1. Input the dot signal from the pattern generator.
2. Set the picture brightness control to its lowest level.
3. Apply 170 VDC to the R, G, and B cathodes with an external power supply.
4. While watching the picture, adjust G2 control RV701 (Screen) to the point just before the return lines disappear.

[White balance adjustment]

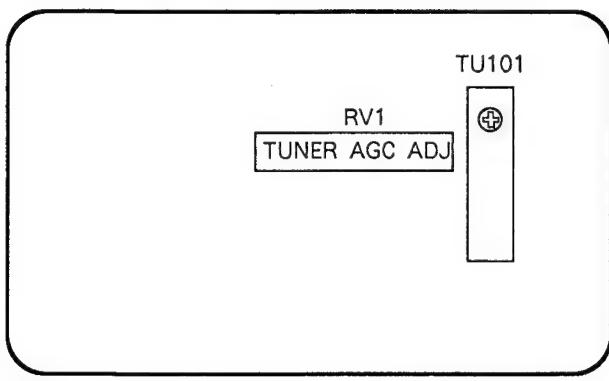
1. Input an all-white signal from the pattern generator.
2. Set the picture brightness and color controls to their normal levels.
3. Use RV704 (B Drive) and RV703 (G Drive) to adjust the white balance.

In the adjustments below, have the picture color and brightness settings at their normal levels unless there is a specific instruction to the contrary.

## SECTION 4

### CIRCUIT ADJUSTMENTS

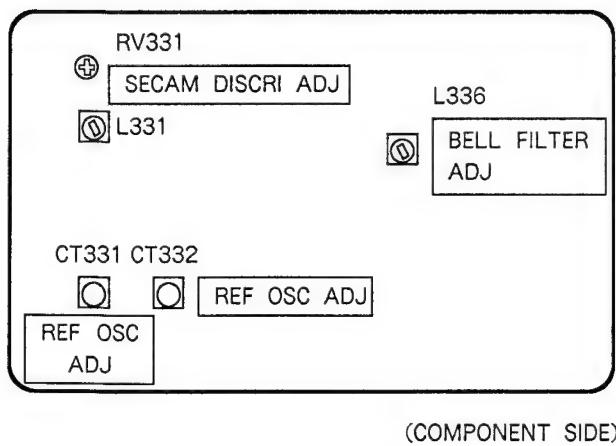
#### 4-1 A BOARD ADJUSTMENTS



##### TUNER AGC ADJUSTMENT (VIF101 RV1)

1. Align with an appropriate signal between stations.
2. Adjust RV1 so that snow noise and cross modulation just disappear from the picture.

#### 4-2. B BOARD ADJUSTMENTS



##### REFERENCE OSCILLATOR ADJUSTMENT (CT332 8.8 MHz)

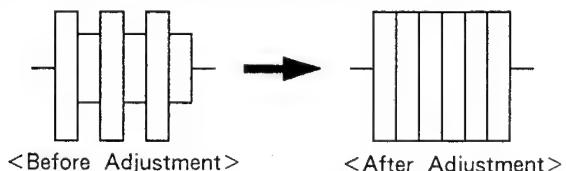
1. Input a PAL color bar signal.
2. Ground Pin ⑯ of IC331.
3. Adjust CT332 to obtain synchronization.

##### REFERENCE OSCILLATOR ADJUSTMENT (CT331 7.16 MHz)

1. Input an NTSC color bar signal.
2. Ground Pin ⑯ of IC331.
3. Adjust CT331 to obtain synchronization.
4. Remove the justper grounding Pin ⑯ of IC331.

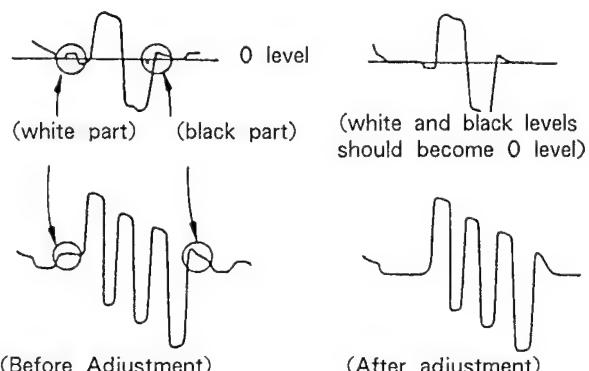
##### BELL FILTER ADJUSTMRNT (L336)

1. Input a SECAM color bar signal.
2. Connect the oscilloscope to the emitter of Q335.
3. Adjust L336 so that the waveform is flat.

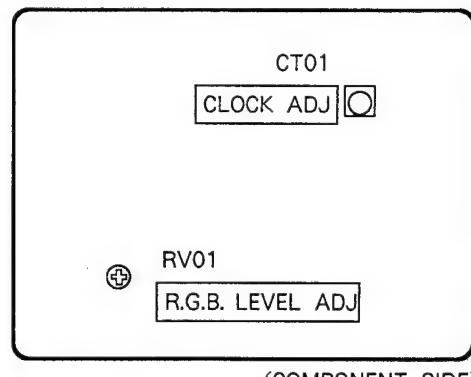


##### DISCRIMINATION ADJUSTMENT (RV331 and L331)

1. Input a SECAM color bar signal.
2. Connect the oscilloscope to Pin ① of IC331.
3. Adjust RV331 so that the white and black sections of the wave form at Pin ① come to the 0 level.
4. Connect the oscilloscope to Pin ③ of IC331.
5. Adjust L331 so that the white and black sections of the wave form at Pin ③ come to the 0 level.



#### 4-3. V BOARD ADJUSTMENTS

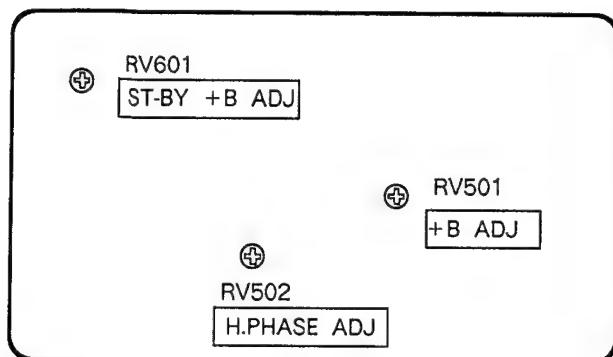


1. Remove the V-1 connector.
2. Put the system into Text mode.
3. Adjust CT01 so that the picture does not move.

##### RGB LEVEL ADJUSTMENT (RV01)

1. Maximize the picture setting.
2. Adjust RV01 so that RGB output is 0.75V

#### 4-4. D BOARD ADJUSTMENTS



##### +B ADJUSTMENT (RV501)

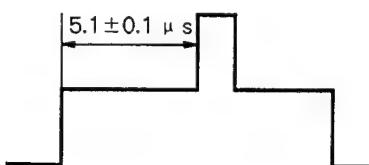
1. Connect the digital multimeter to TP91.
2. Adjust RV501 to obtain  $135 \pm 3.0V$ .

##### ST-BY +B ADJUSTMENT (RV601)

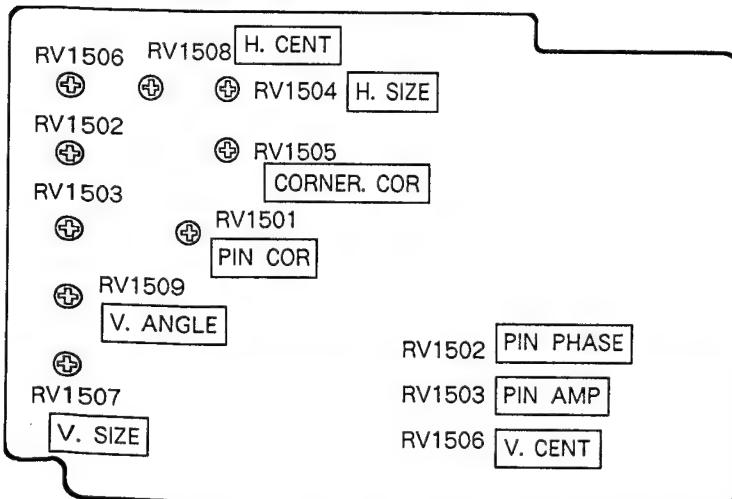
1. Put the system into  $\phi$  standby mode (remote commander).
2. Connect the digital multimeter to TP91.
3. Adjust RV601 to obtain  $135 \pm 3.0V$ .
4. Take the system out of  $\phi$  standby mode (remote commander).

##### H.PHASE ADJUSTMENT (RV502)

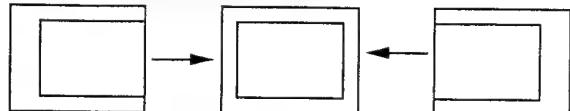
1. Input a PAL color bar signal.
2. Set the picture and brightness controls to their normal levels.
3. Set RV1508 (H. CENT) to its mechanical center.
4. Connect the oscilloscope to pin ⑪ (SCP) of IC501.
5. Rotate RV502 to adjust to  $5.1 \pm 0.1 \mu s$ .



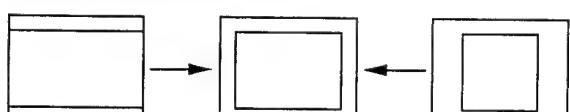
#### 4-5. J1 BOARD ADJUSTMENTS



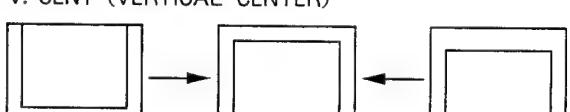
##### RV1508 H. CENT (HORIZONTAL CENTER)



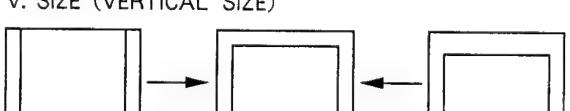
##### RV1504 H. SIZE (HORIZONTAL SIZE)



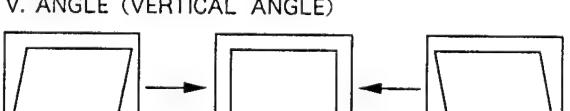
##### RV1506 V. CENT (VERTICAL CENTER)



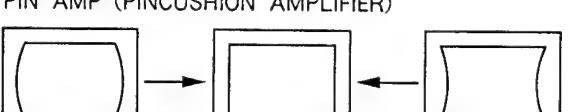
##### RV1507 V. SIZE (VERTICAL SIZE)



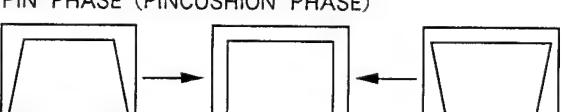
##### RV1509 V. ANGLE (VERTICAL ANGLE)



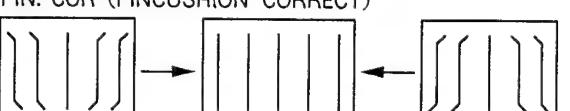
##### RV1503 PIN AMP (PINCUSHION AMPLIFIER)



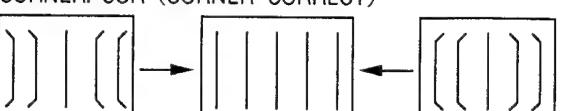
##### RV1502 PIN PHASE (PINCUSHION PHASE)



##### RV1501 PIN. COR (PINCUSHION CORRECT)



##### RV1505 CORNER. COR (CORNER CORRECT)



## SECTION 5 DIAGRAMS

### 5-1. BLOCK DIAGRAM

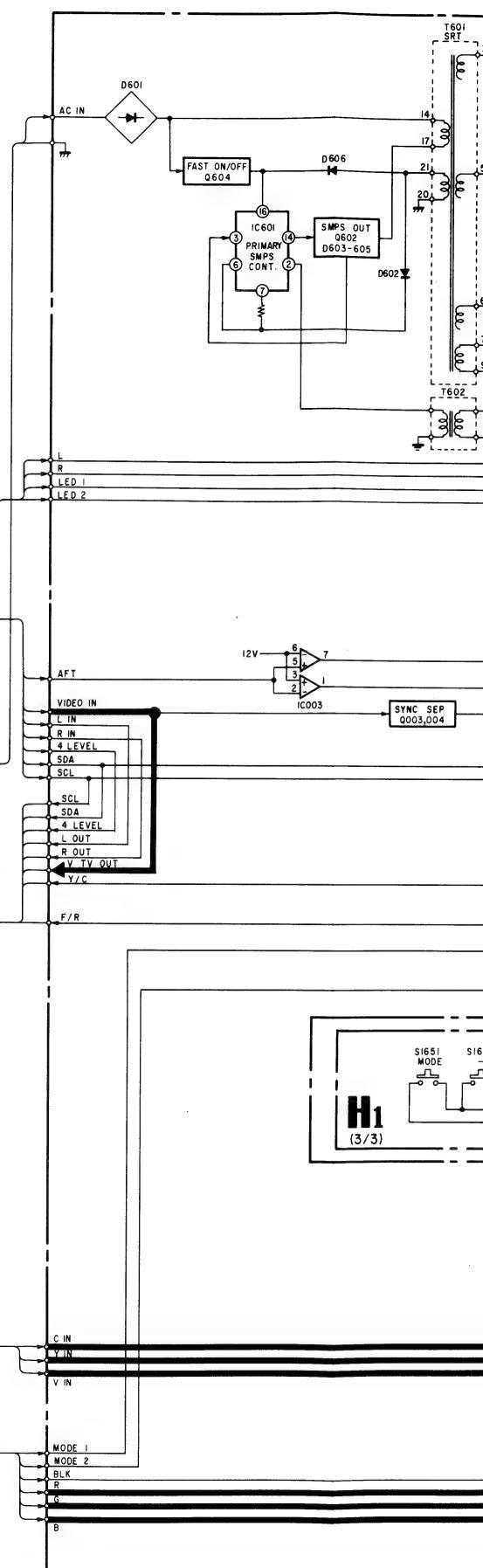
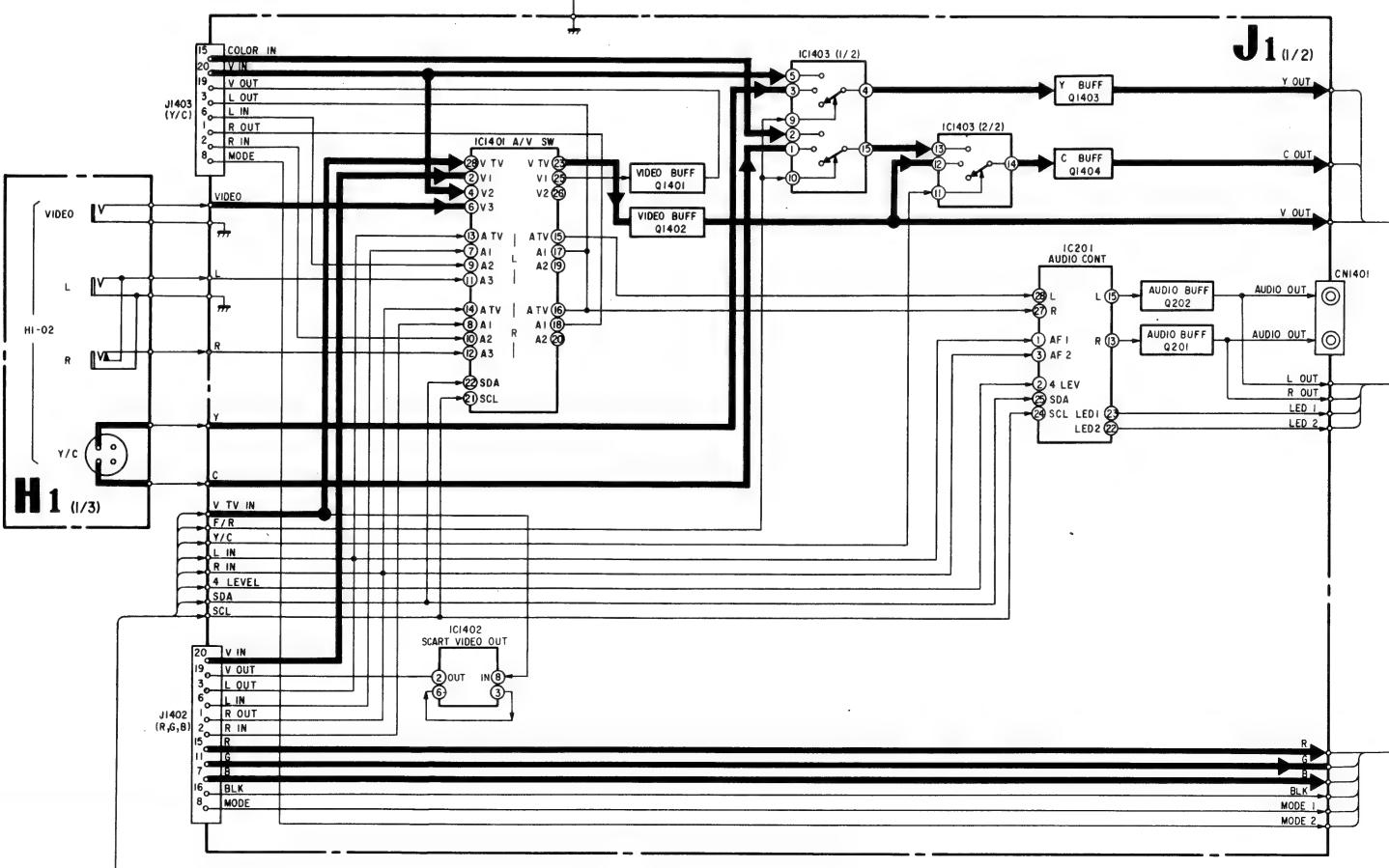
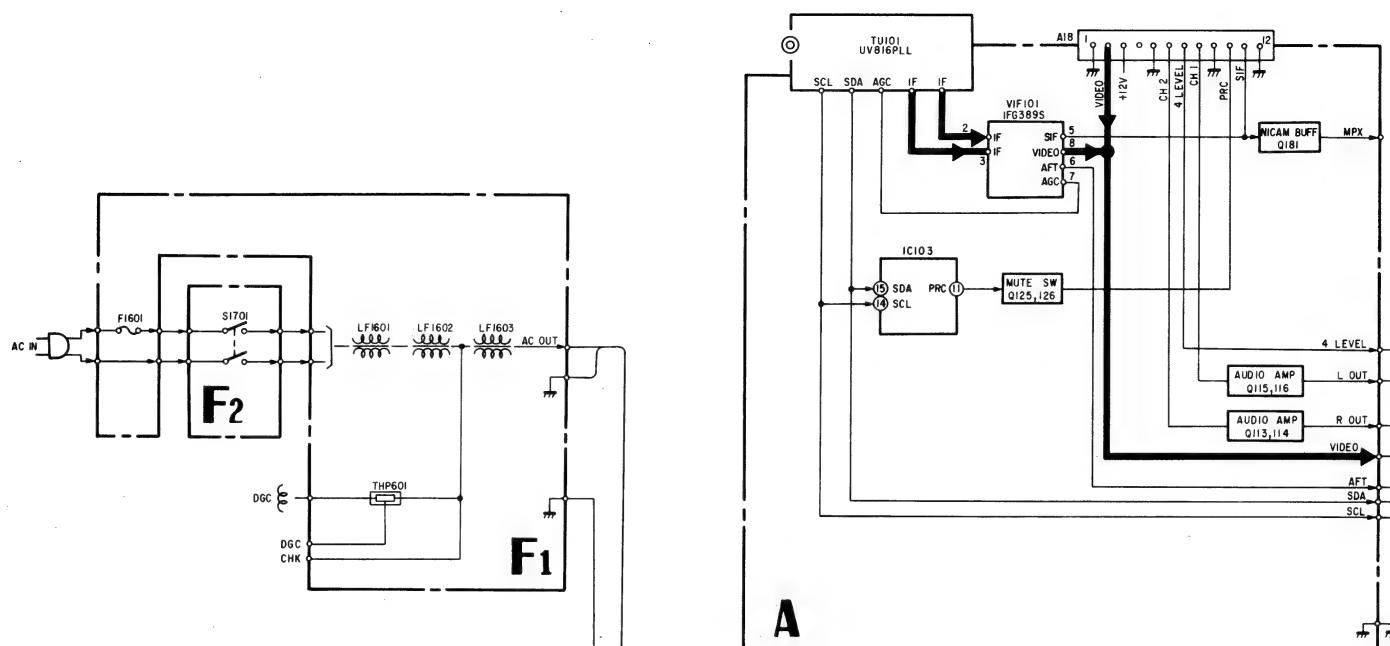
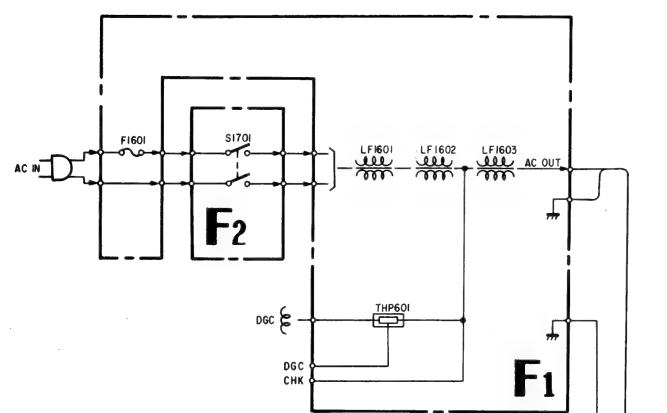
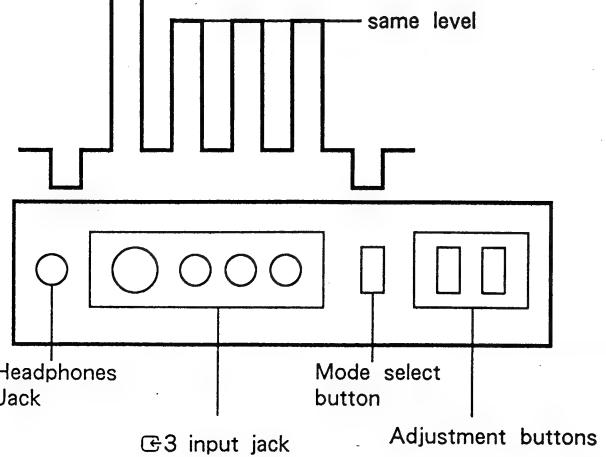
#### SUB BRIGHTNESS ADJUSTMENT

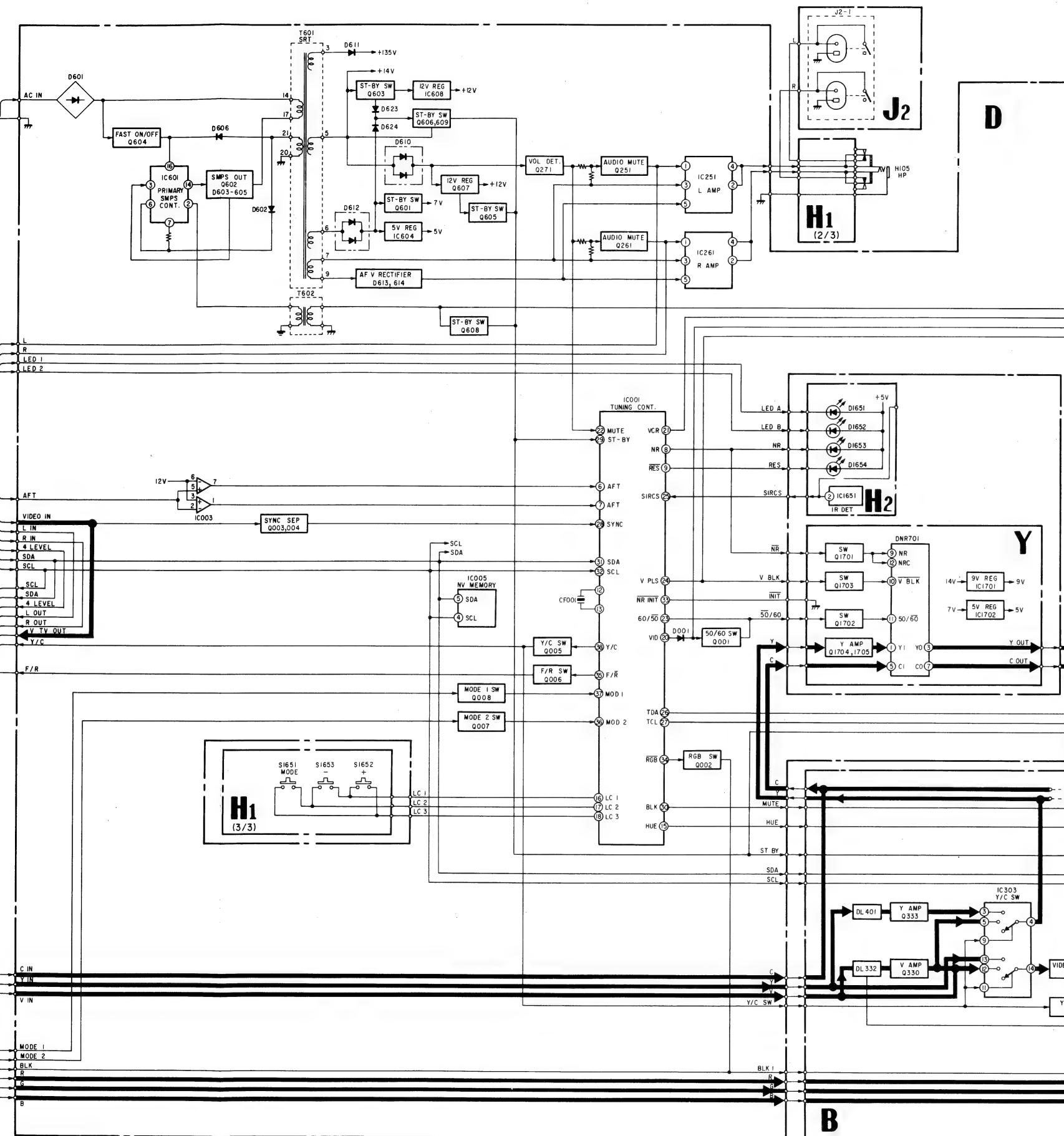
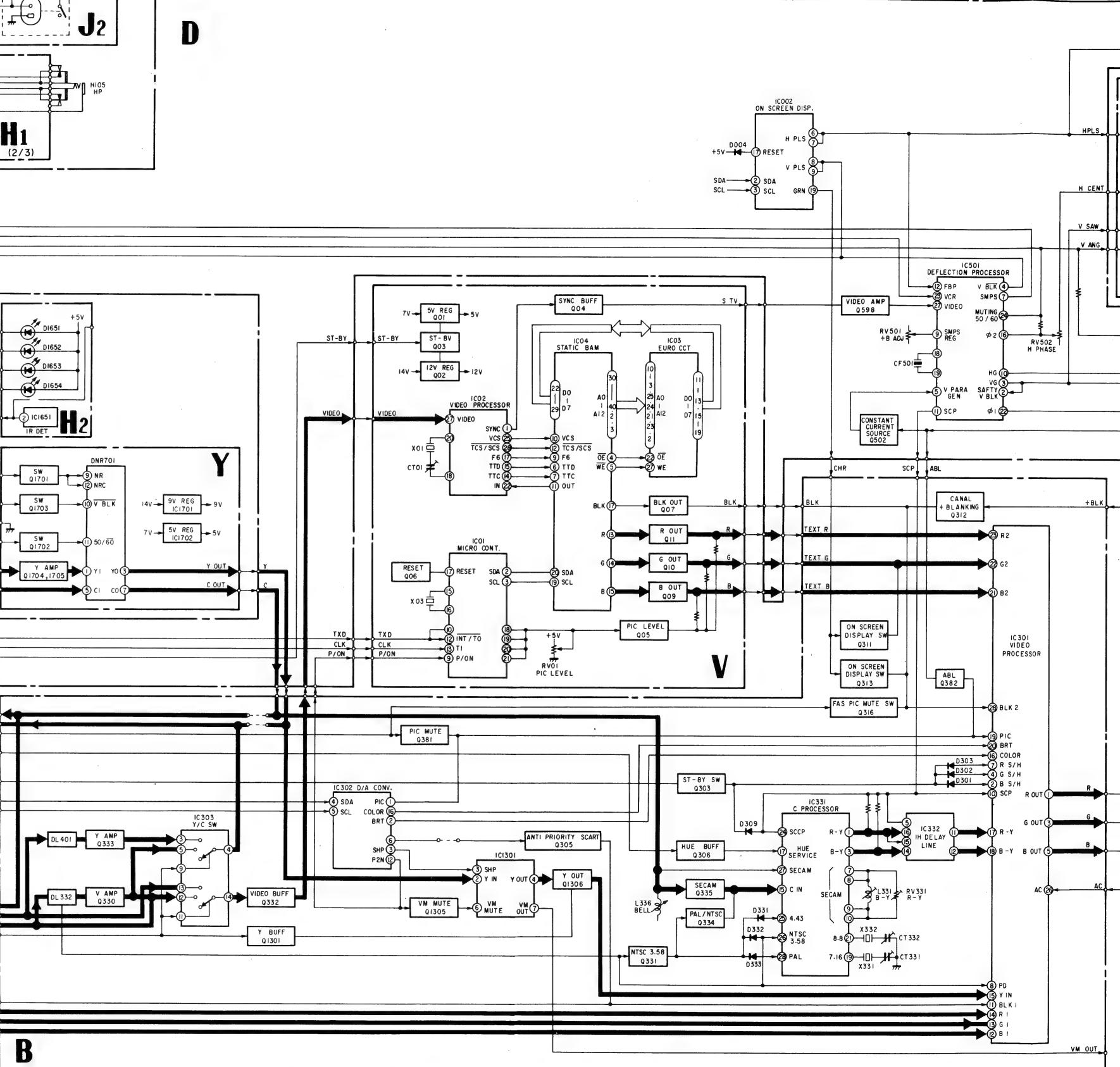
- Set the system to receive a test color pattern.
  - Press  $\rightarrow\leftarrow$  on the remote commander to put the system into normal mode.
  - Switch off the power.
  - While depressing the adjusting buttons + and - simultaneously, turn on the power. (SUB mode is obtained)
  - Minimize the  $\bullet$  contrast setting.
  - Adjust the  $\otimes$  brightness control so that the gray scale 0 IRE section is cut off completely and the 20 IRE section is barely glowing.
  - Depress the  $\diamond$  (store) button of the remote commander. (SUB mode is released)
- If there is no test color pattern

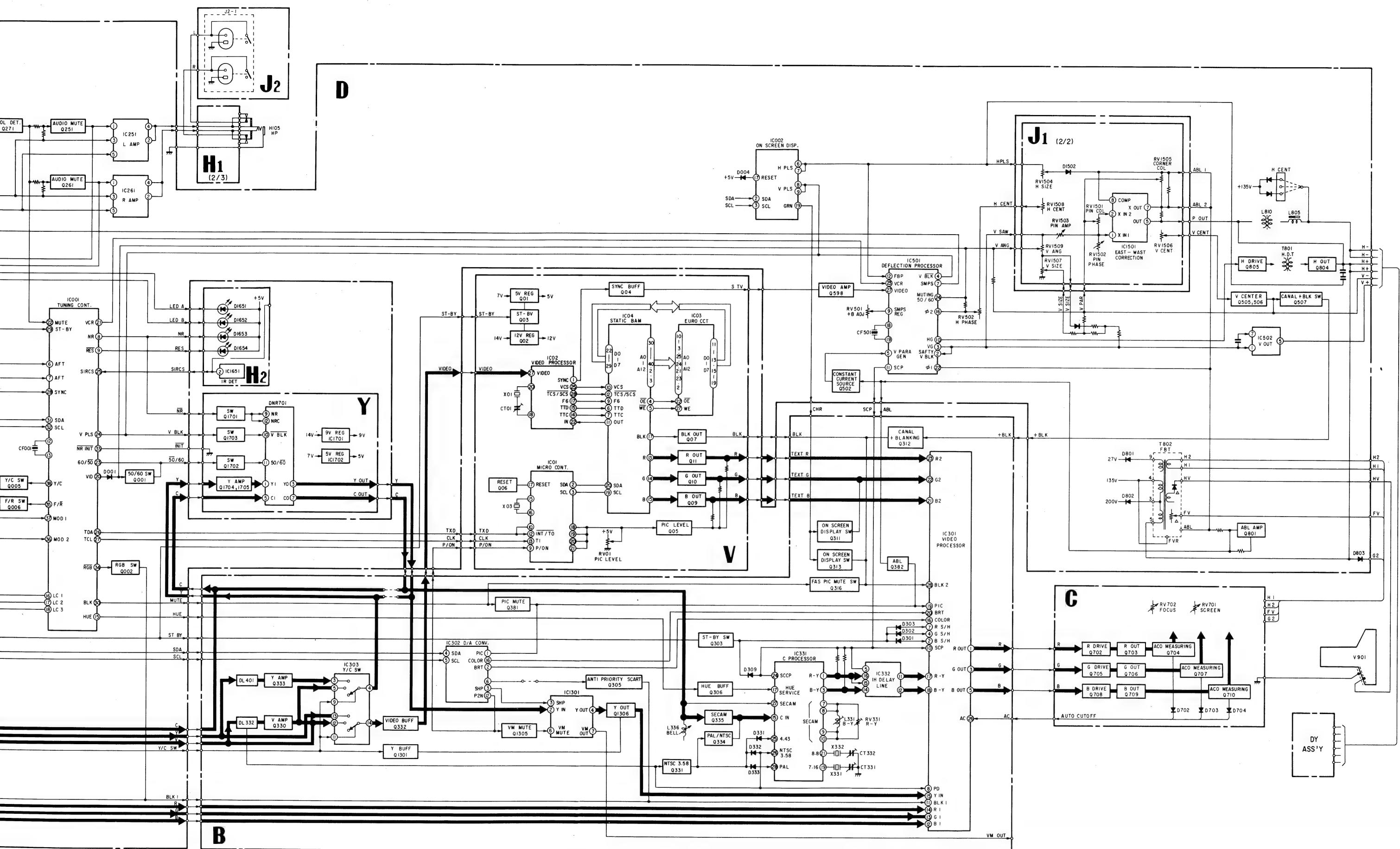
- Set the system to receive a color pattern.
- Press on the remote commander to put system into normal mode.
- Set the  $\bullet$  color to its normal state.
- 3-5 are the same as above.
- Since 20 IRE is nearly blue, adjust the  $\otimes$  brightness control so that the blue barely glows.
- is the same as above.
- Press  $\rightarrow\leftarrow$  on the remote commander to put the system into normal mode.

#### SUB COLOR ADJUSTMENT

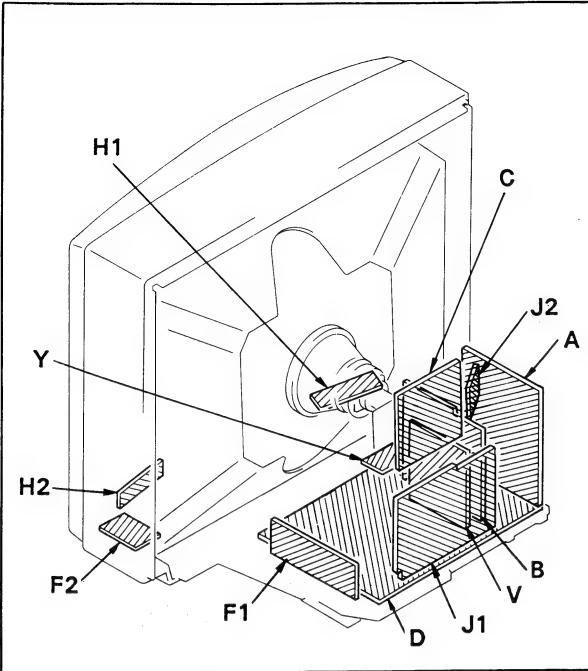
- Set the system to receive color bars.
- Press  $\rightarrow\leftarrow$  on the remote commander to put the system into normal mode.
- Cut off the power.
- While depressing the adjusting buttons + and - simultaneously, turn on the power. (SUB mode is obtained)
- Adjust the color control so that the B out wave form (Pin ② of C board connector CNC72) is as shown in the figure below.
- Depress the  $\diamond$  (store) button of the remote commander. (SUB mode is released)



**D****B**



## 5-2. CIRCUIT BOARDS LOCATION



Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

## Note :

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.
- pF :  $\mu\mu\text{F}$  50WV or less are not indicated except for electrolytics.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch : 5mm

Rating electrical power: 1/4W

- Chip resistor is in 1/10W.
- All resistors are in ohms.  $\text{k}\Omega = 1000\Omega$ ,  $\text{M}\Omega = 1000\text{k}\Omega$
- : nonflammable resistor.
- : fusible resistor.
- $\Delta$  : internal component.
- : panel designation.
- All variable and adjustable resistors have characteristic curve B.unless otherwise noted.
- All voltages are in V.
- Readings are taken with a 10M $\Omega$  digital multimeter.
- Readings are taken with a color-bar signal input.
- : adjustment for repair.
- Voltage variations may be noted due to normal production tolerances.
- $\text{---}$  : B + line.
- $\text{.....}$  : signal path.

## Reference information

RESISTOR	RN	METAL FILM
	RC	SOLID
	FPRD	NONFLAMMABLE CARBON
	FUSE	NONFLAMMABLE FUSIBLE
	RS	NONFLAMMABLE METAL OXIDE
	RB	NONFLAMMABLE CEMENT
	RW	NONFLAMMABLE WIREWOUND
	*	ADJUSTMENT RESISTOR
COIL	LF-8L	MICRO INDUCTOR
CAPACITOR	TA	TANTALUM
	PS	STYROL
	PP	POLYPROPYLENE
	PT	MYLAR
	MPS	METALIZED POLYESTER
	MPP	METALIZED POLYPROPYLENE
	ALB	BIPOLAR
	ALT	HIGH TEMPERATURE
	ALR	HIGH RIPPLE

## 5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS -Conductor Side-

F1

[LINE FILTER, DGC]

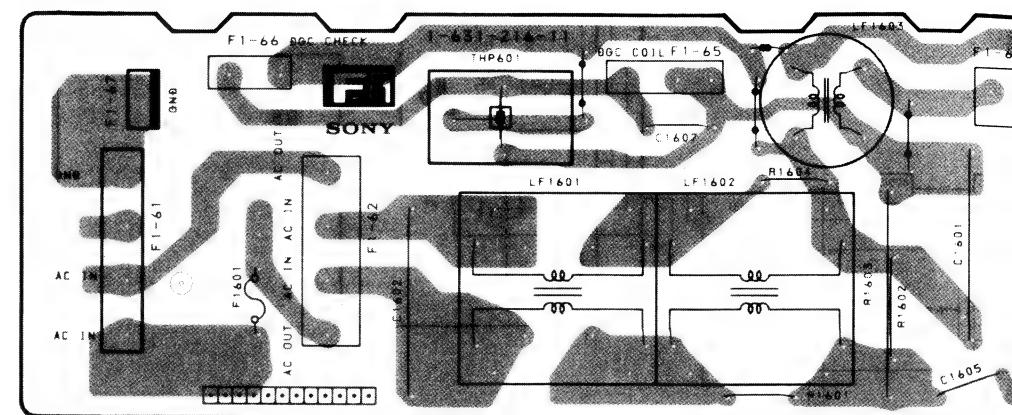
F2

[POWER SWITCH]

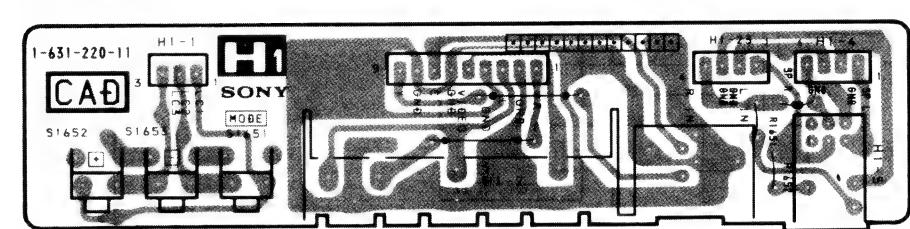
H1

[CONTROL SW HEADPHONE]

## —F1 Board—



## —H1 Board—



**F2**

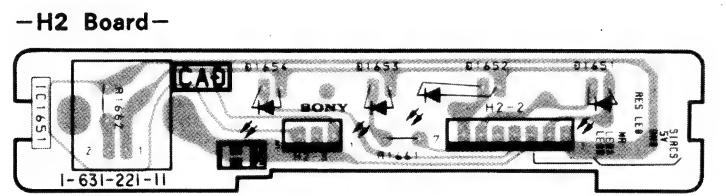
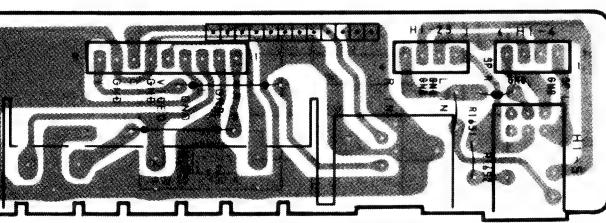
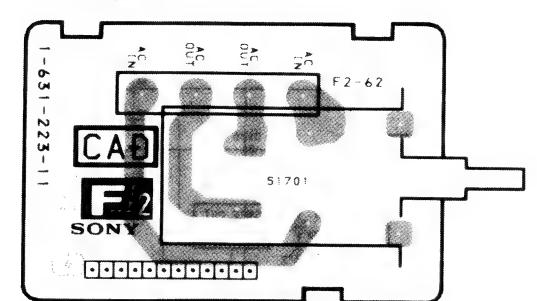
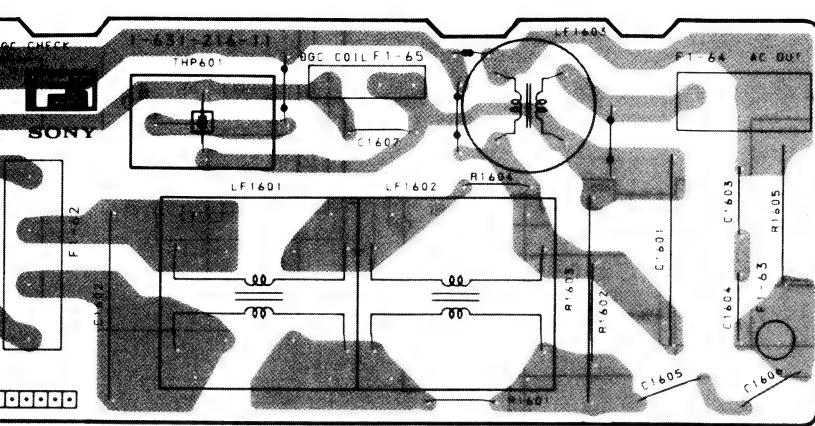
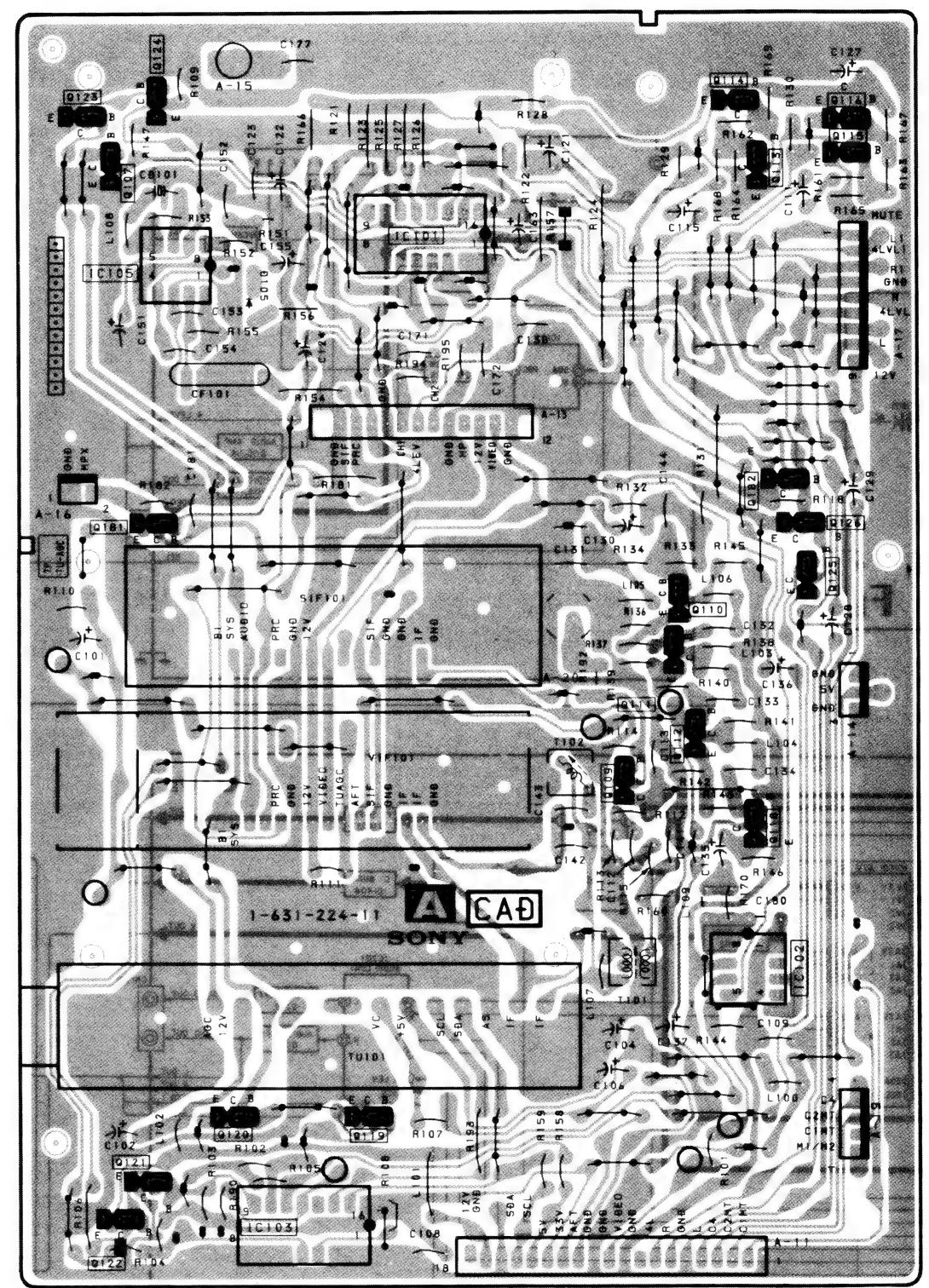
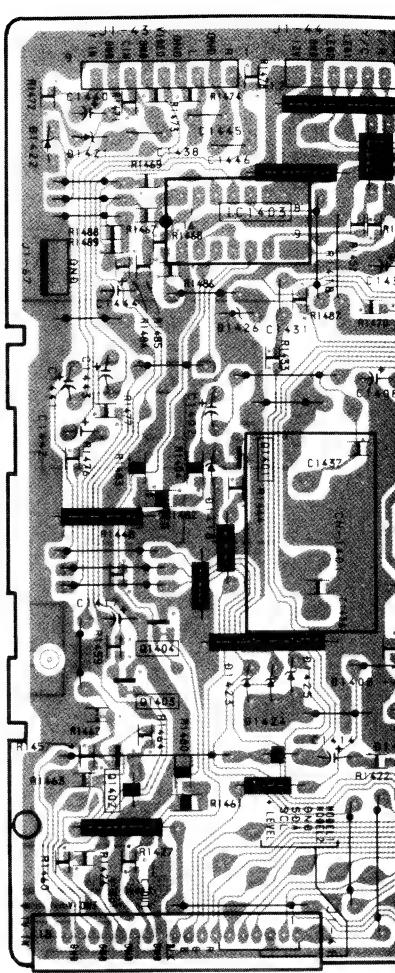
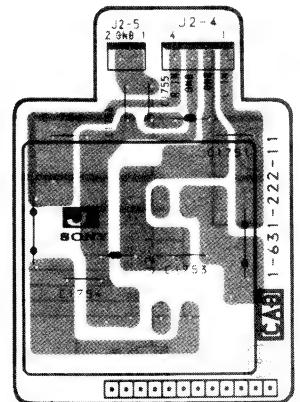
[POWER SWITCH]

**H1**[CONTROL SW, AV INPUT,  
HEADPHONE]**H2**[SIRCS RECEIVER,  
INDICATOR]**A**[TUNER,  
VIF SIF]**J1**[AUDIO CONTROL, AV INPUT,  
SCART VIDEO OUT,  
EAST-WEST CORRCTION]**J2**

[SPEAKER TERMINAL]

**Y**[NOISE  
REDUCTION]

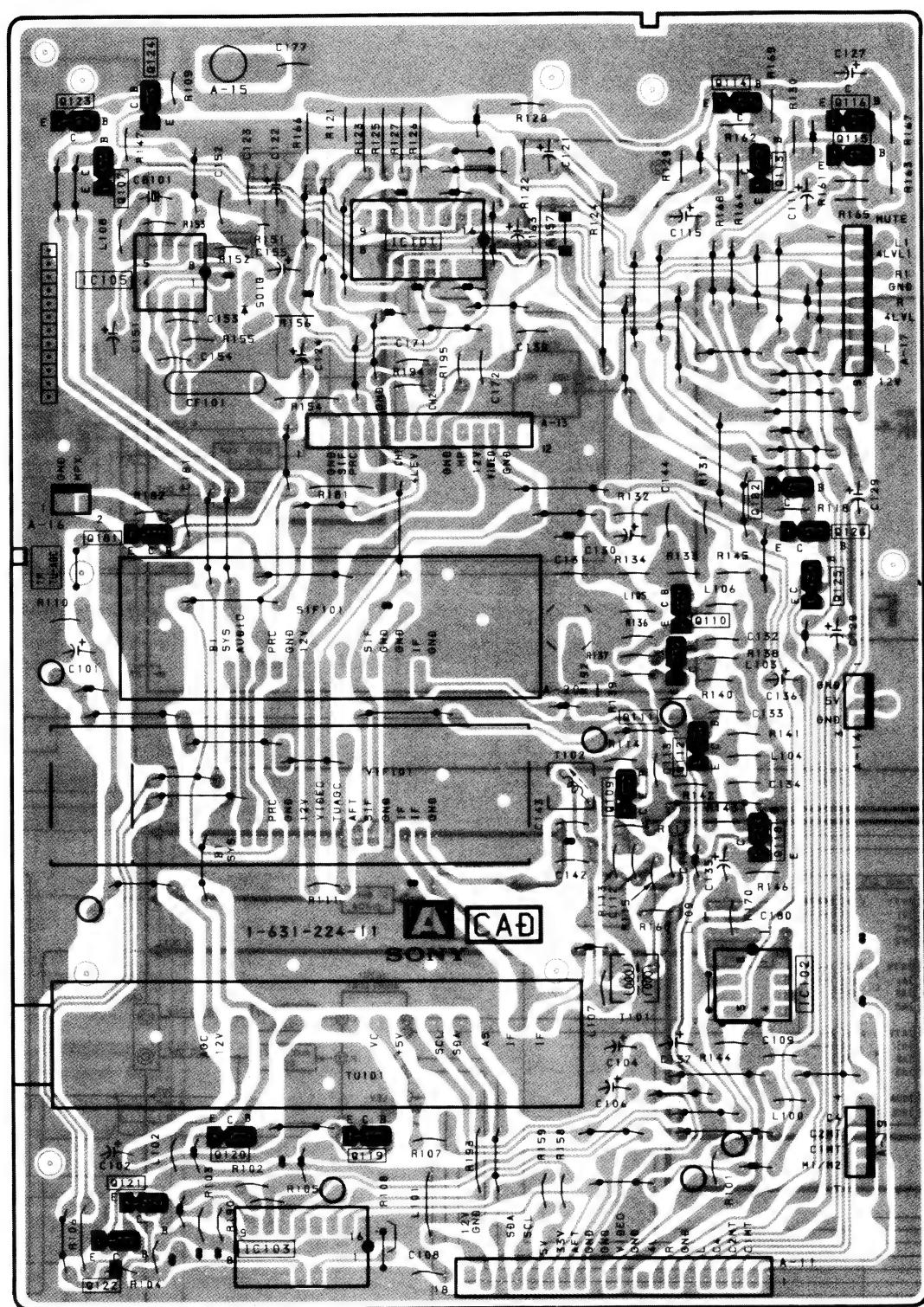
C]

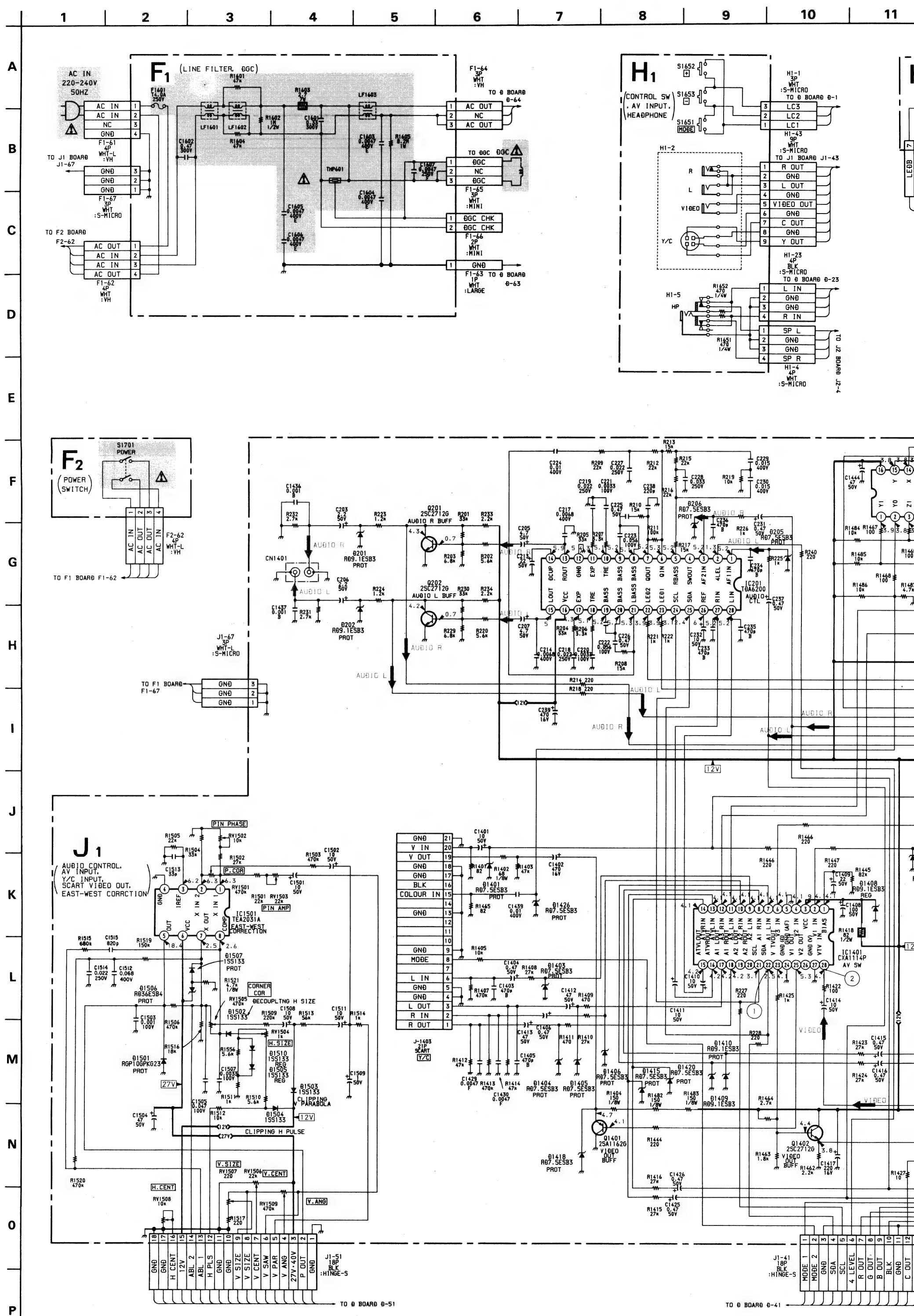
**-A Board-****-J1 Board-****-J2 Board-**

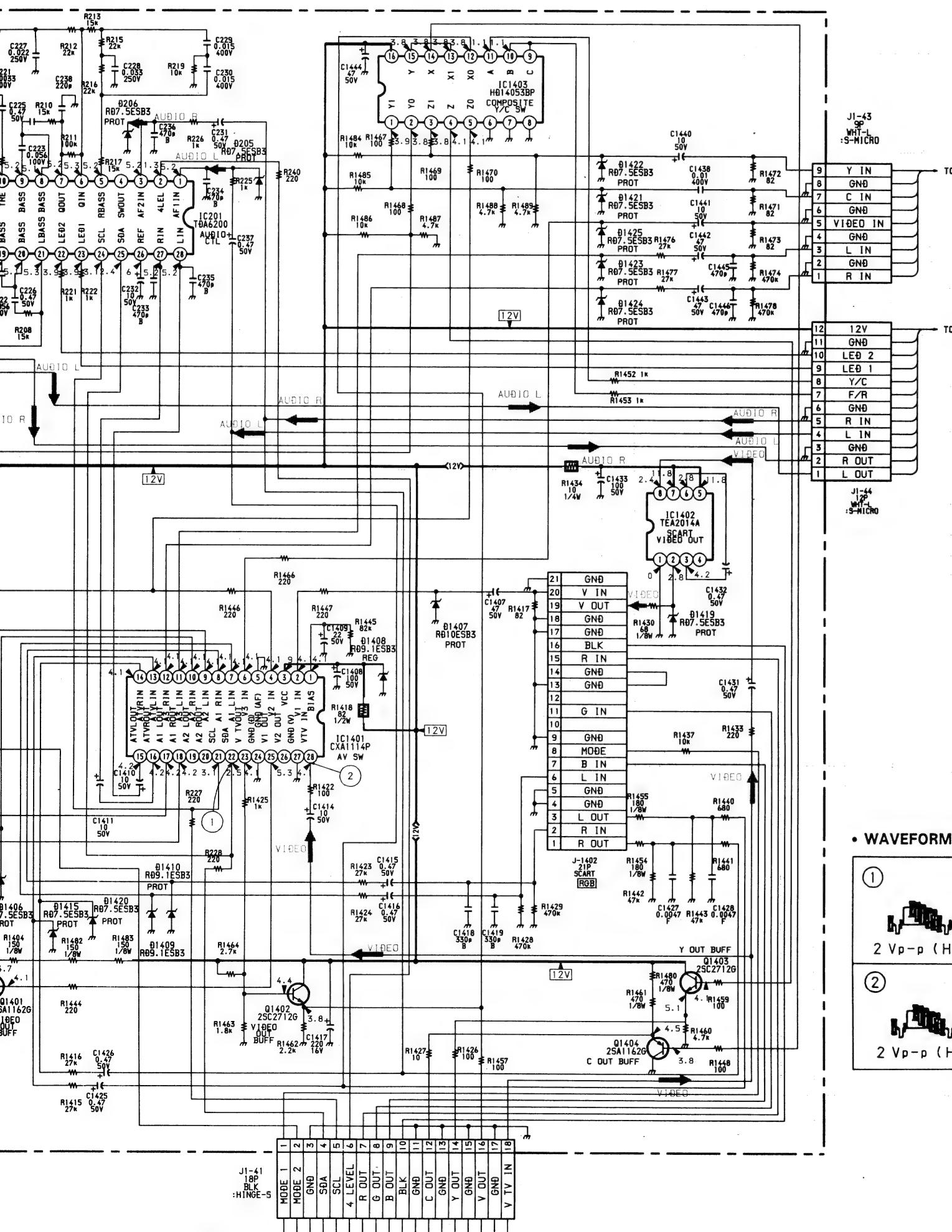
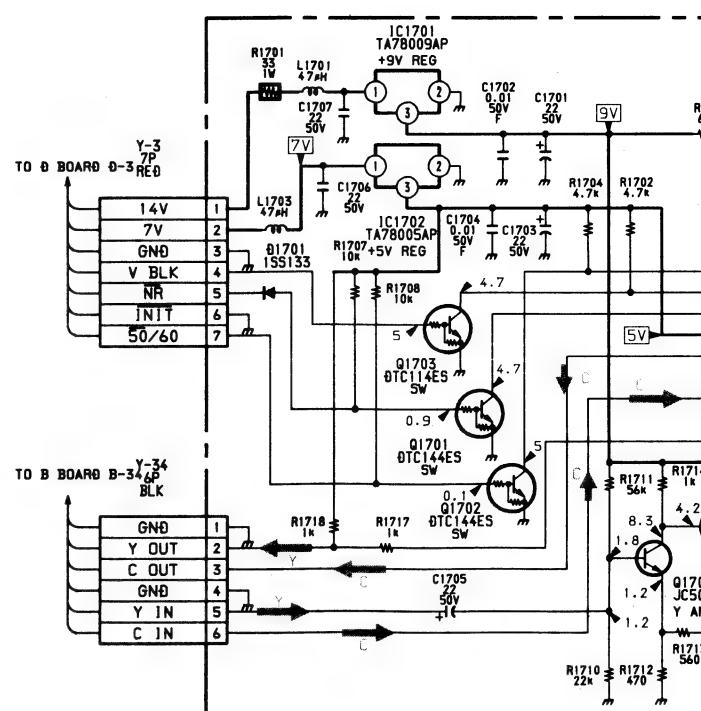
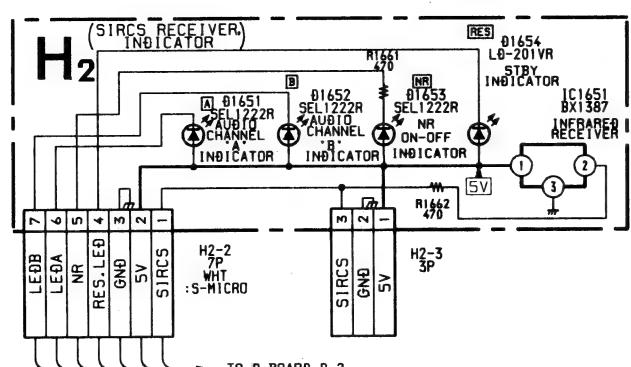
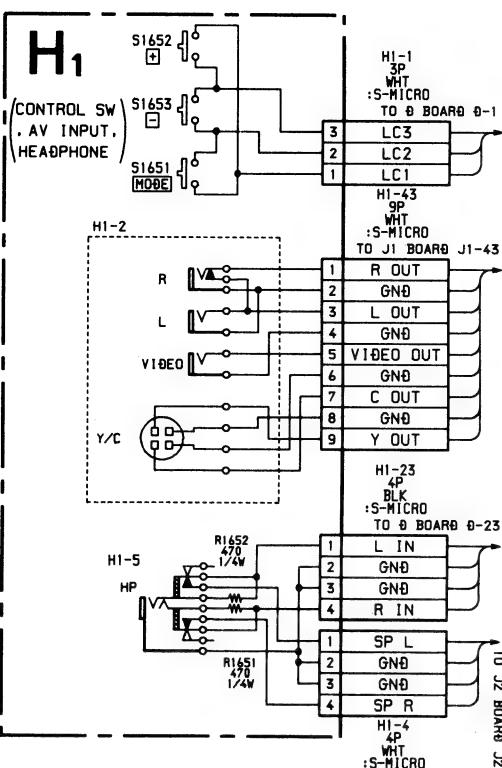
SIRCS RECEIVER,  
INDICATOR**A**TUNER,  
VIF SIF**J1**AUDIO CONTROL, AV INPUT,  
SCART VIDEO OUT,  
EAST-WEST CORRCTION**J2**[SPEAKER TERMINAL] **Y** [NOISE  
REDUCTION]

2 Board-

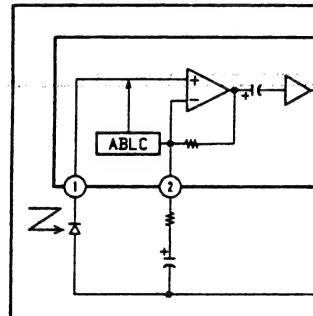
-A Board-



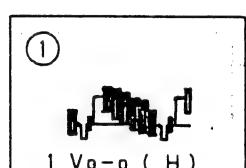




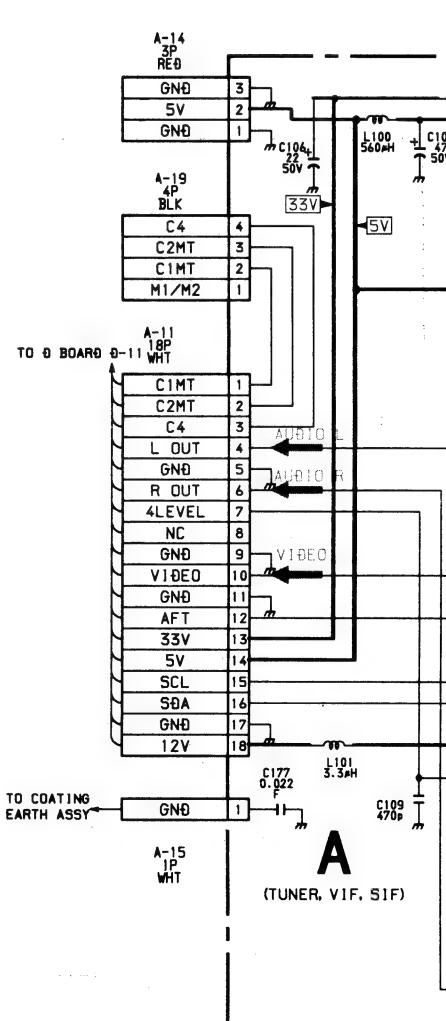
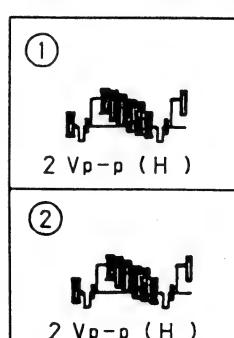
H<sub>2</sub> BOARD IC1651 BX1387

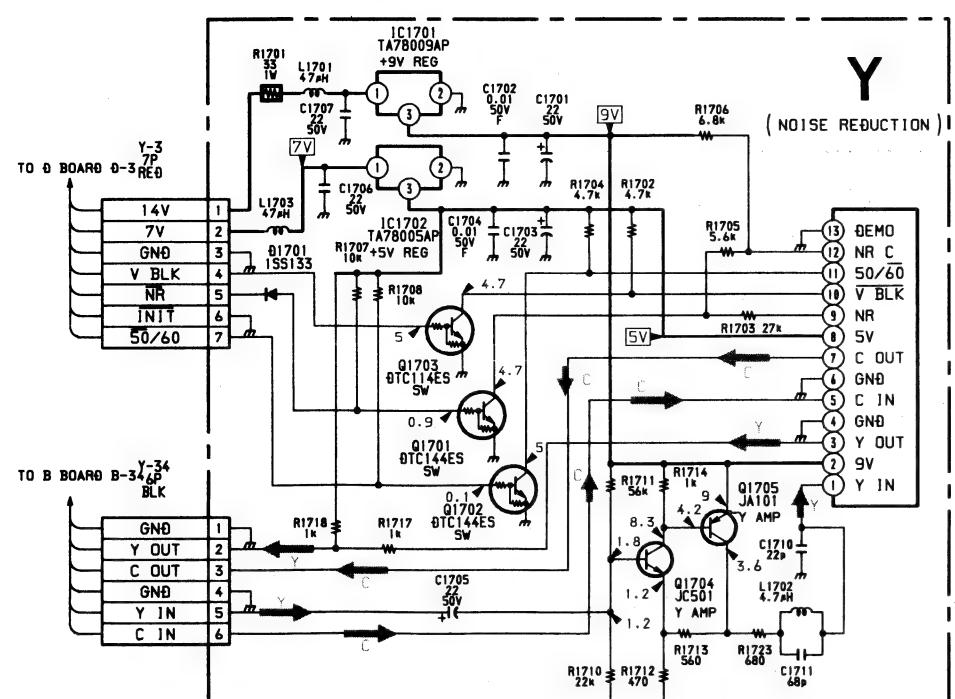


#### • WAVEFORMS A

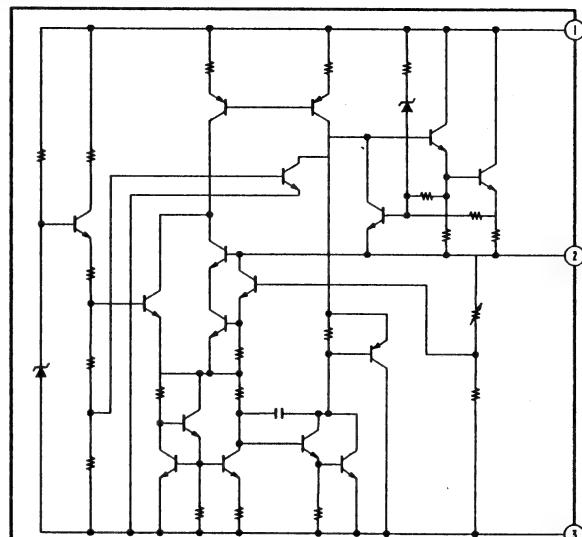


WAVEFORMS 11 BOARD

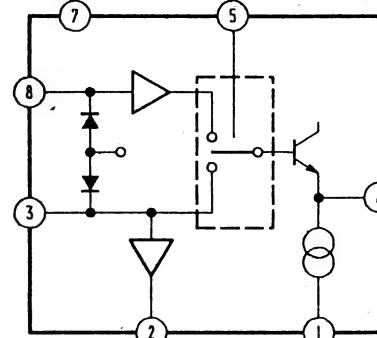




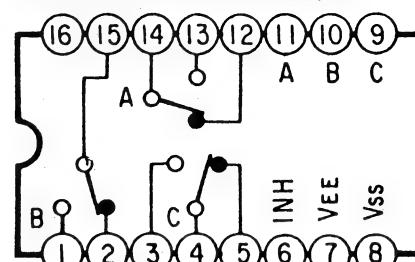
**Y BOARD IC701 TA78009AP**  
**Y BOARD IC702 TA78005AP**



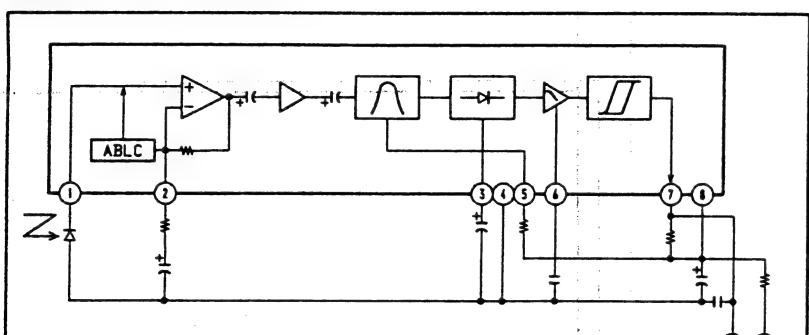
J1 BOARD IC1402 TEA2014A



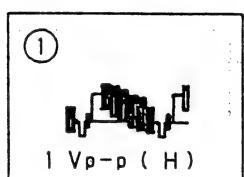
J1 BOARD IC1403 HD14053B



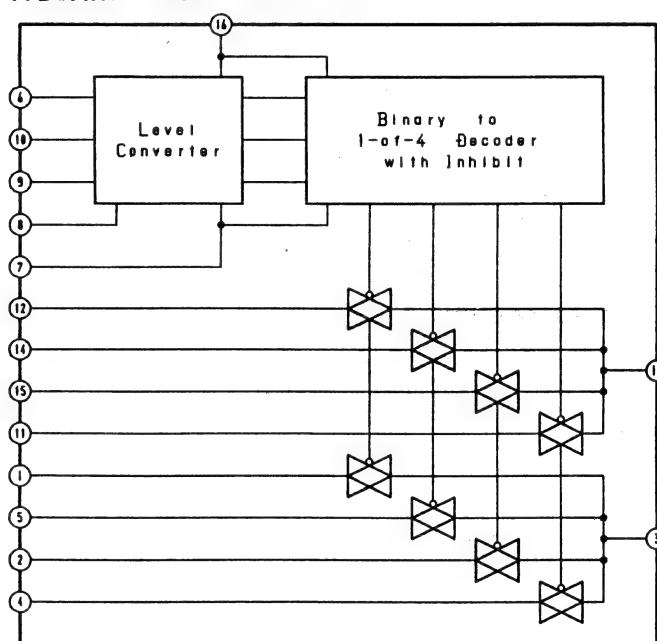
H<sub>2</sub> BOARD IC1651 BX1387



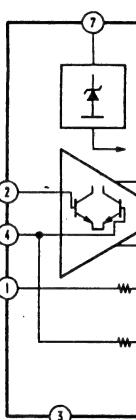
- WAVEFORMS A BOARD



A BOARD IC101 TC4052BPHB



## A BOARD



This detailed circuit diagram illustrates the connections between various electronic components, primarily focusing on the Tuner, VIF, and SIF sections.

**Key Components and Labels:**

- UVB16PLL**: A central integrated circuit (IC) labeled TU101.
- A-14**: A 3P RE0 connector.
- A-19**: A 4P BLK connector.
- A-11**: A 18P WHT connector.
- A-15**: A 1P WHT connector.
- A-16**: A 2P RE0 connector.
- A-17**: A 9P WHT connector.
- IC103 PCF8574 I/O EXPANDER**: An integrated circuit used for bidirectional serial communication.
- Q126 DTA144ES MUTE SW**: A double-pole switch component.
- Q125 BTC144ES MUTE SW**: Another double-pole switch component.
- Q181 JC501 NICAM BUFFER**: A buffer stage for NICAM signals.
- SIF102 IFG-5.5S**: A second integrated circuit labeled A-13.
- AUDIO L** and **AUDIO R**: Signal paths for left and right audio outputs.
- VIDEO**: A signal path for video output.
- TO COATING EARTH ASSY**: A connection to ground.
- (TUNER, VIF, SIF)**: A label indicating the functional block.

The diagram shows the flow of power and control signals from the A-14 connector through various components like the UVB16PLL, IC103, and SIF102, finally reaching the A-17 connector. It also highlights the integration of tuner, VIF, and SIF functions into a single assembly.

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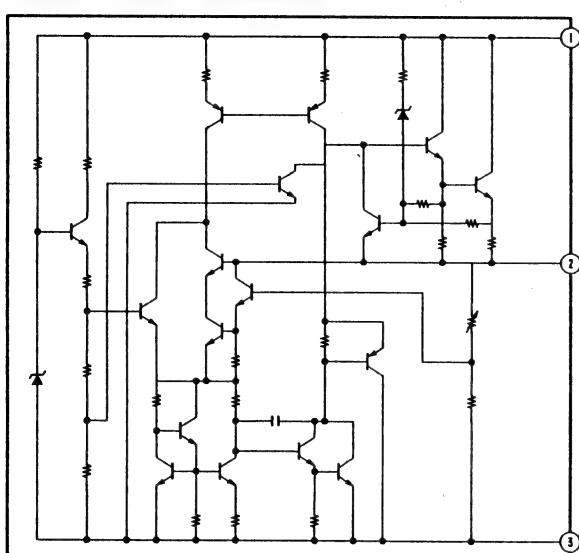
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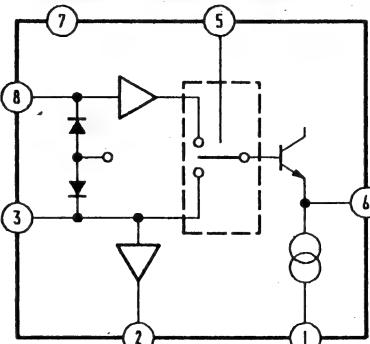
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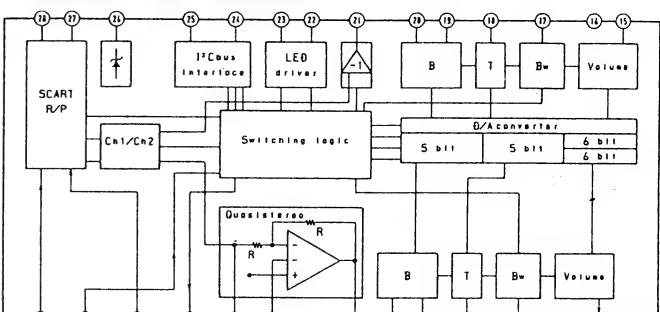
**Y BOARD IC701 TA78009AP  
Y BOARD IC702 TA78005AP**



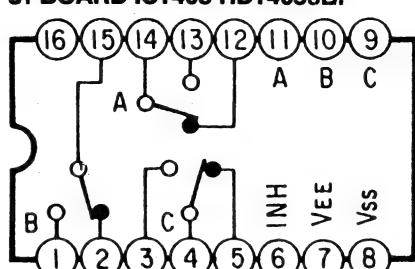
**J1 BOARD IC1402 TEA2014A**



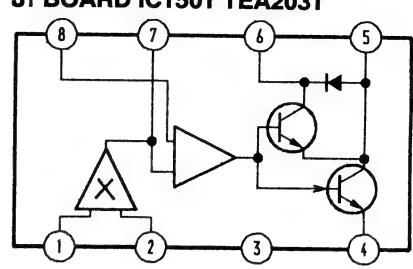
**J1 BOARD IC201 TDA6200**



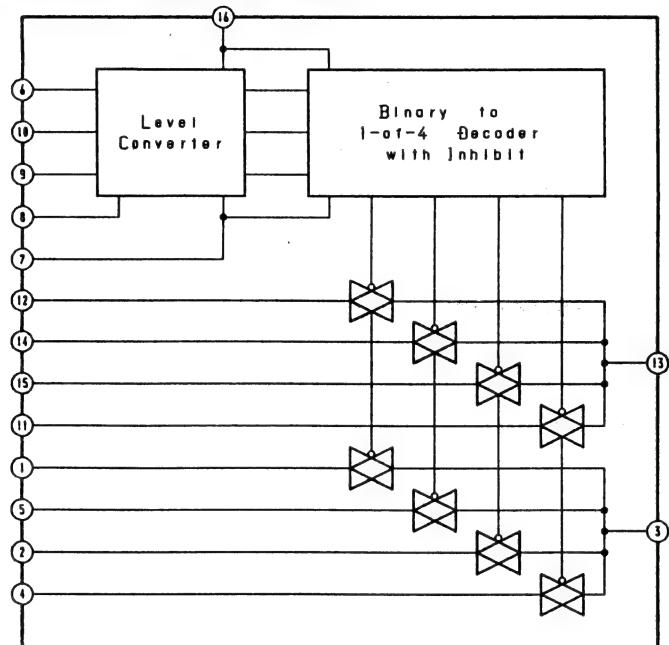
**J1 BOARD IC1403 HD14053BP**



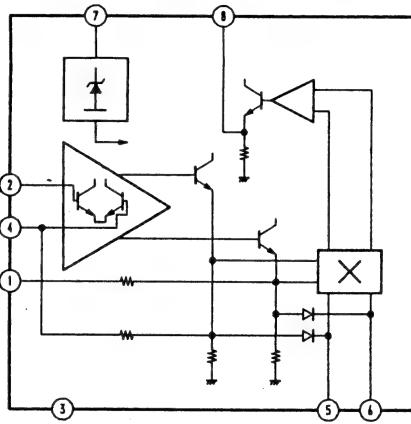
**J1 BOARD IC1501 TEA2031**



**A BOARD IC101 TC4052BPHB**

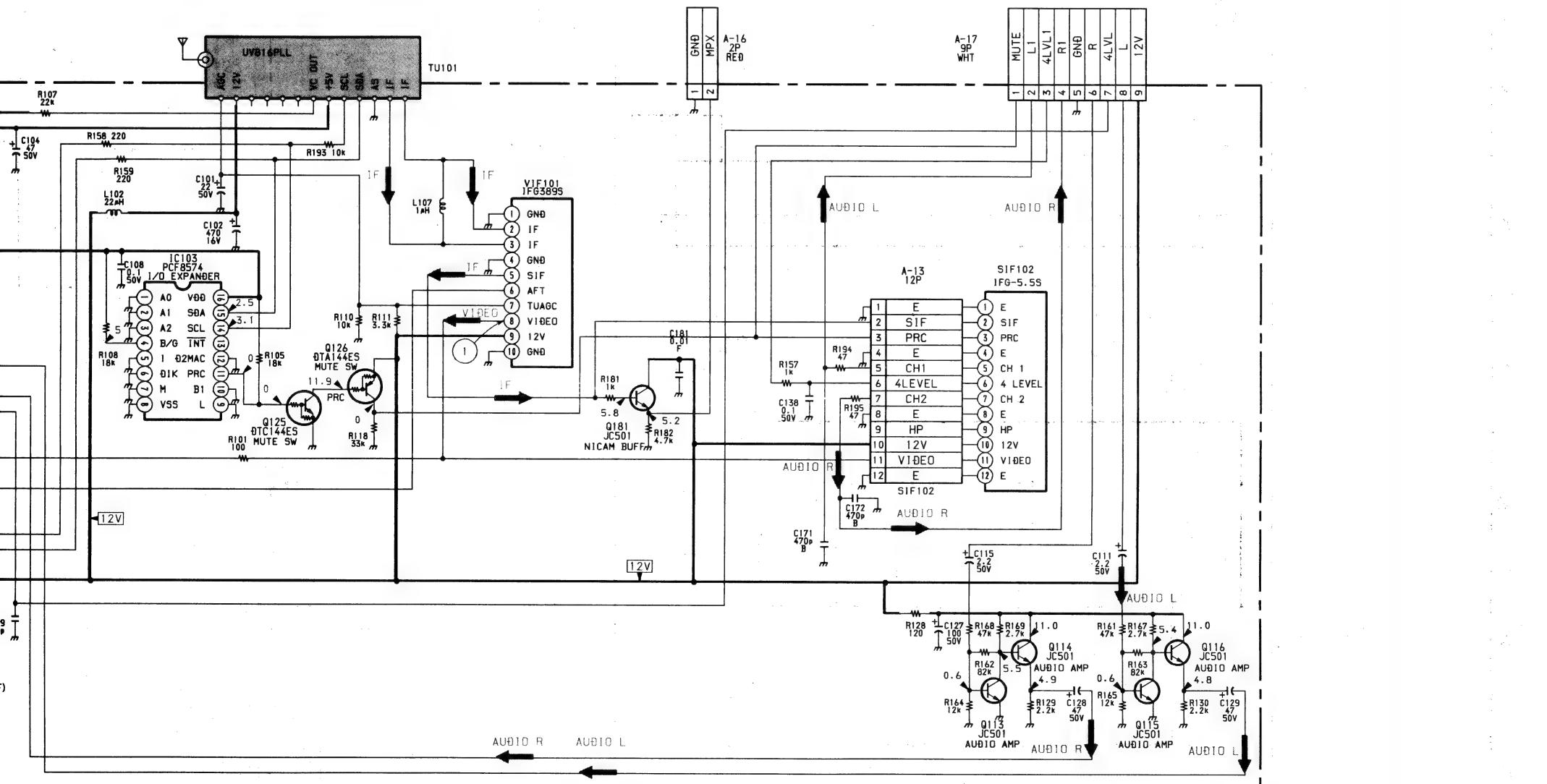


**A BOARD IC105 TBA129**



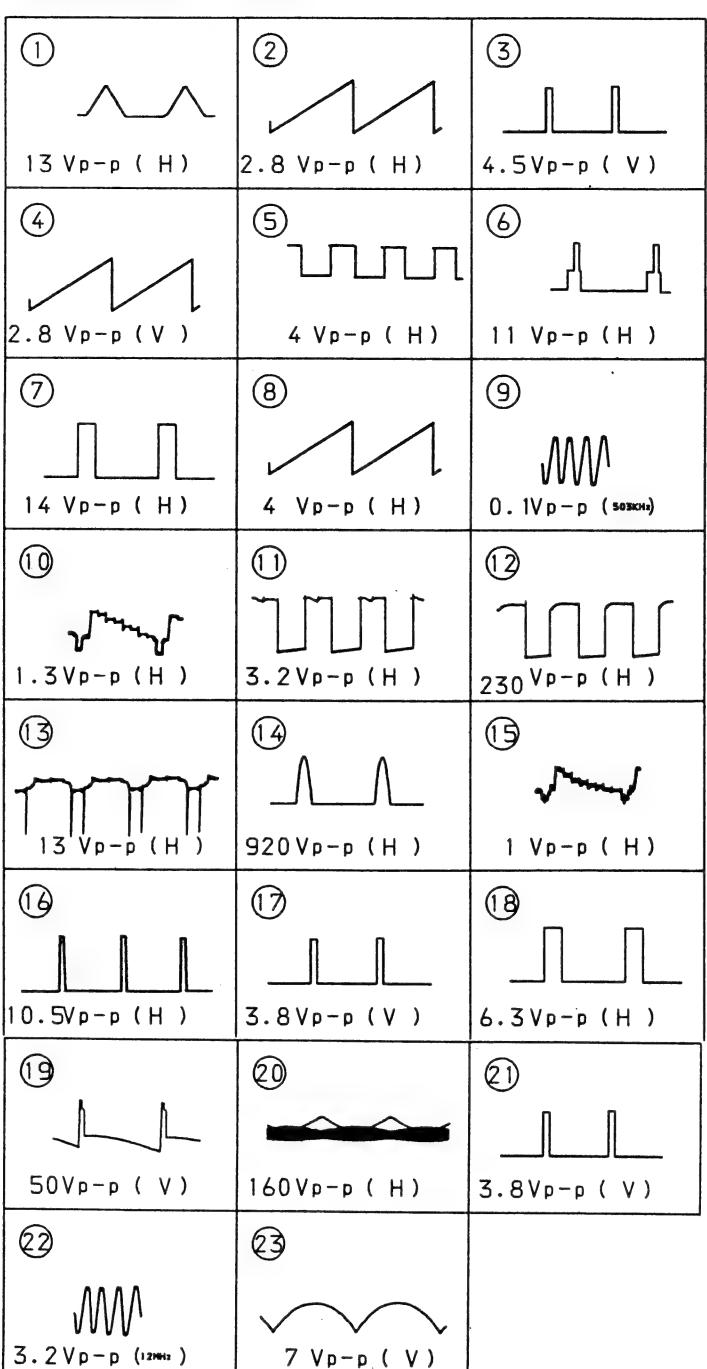
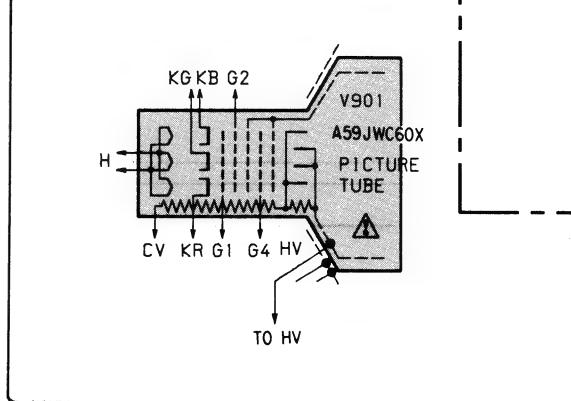
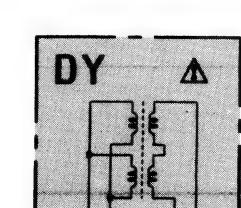
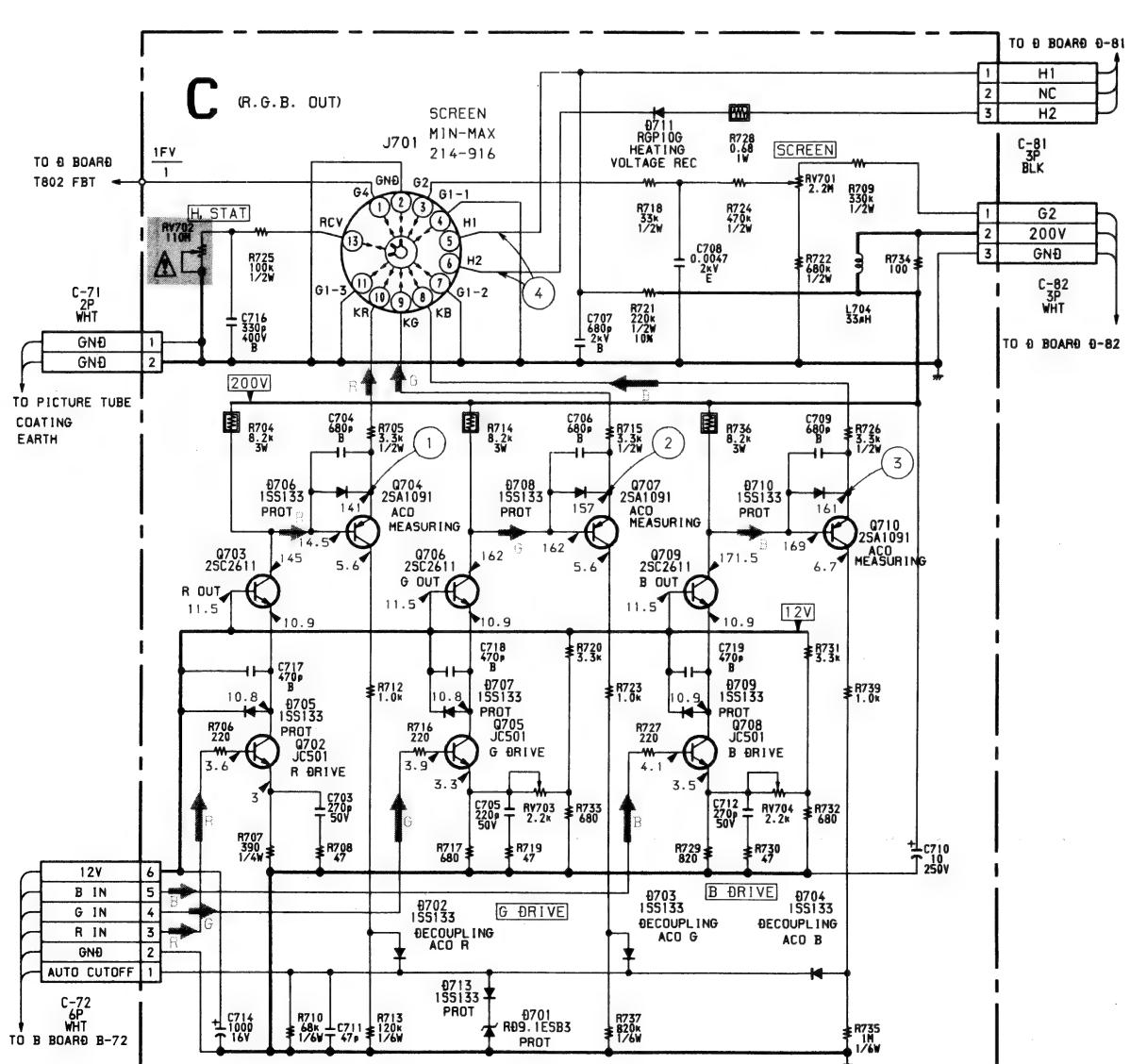
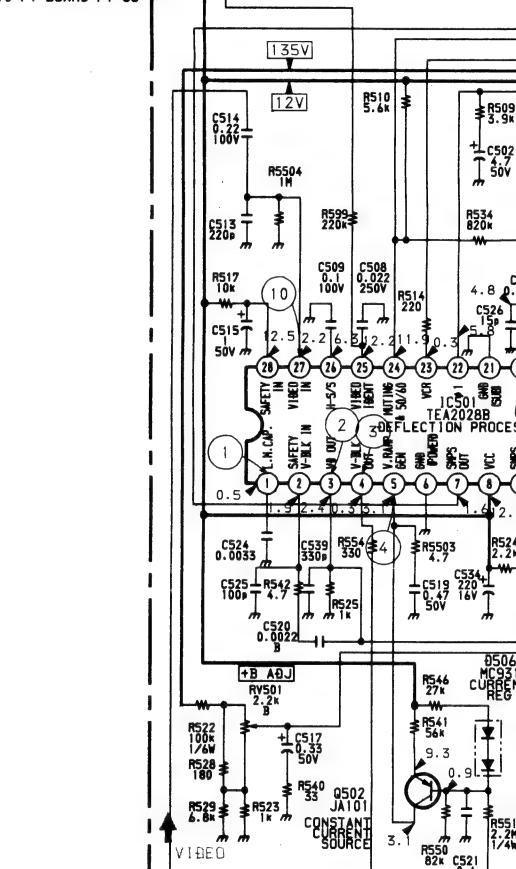
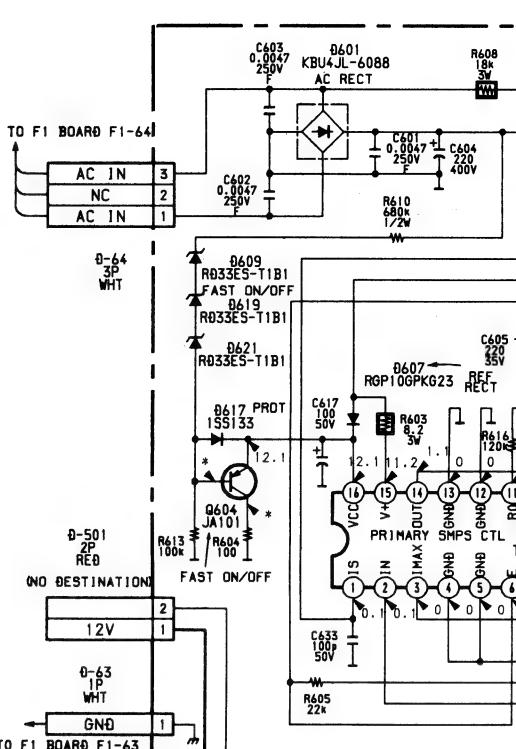
X1387

A BOARD

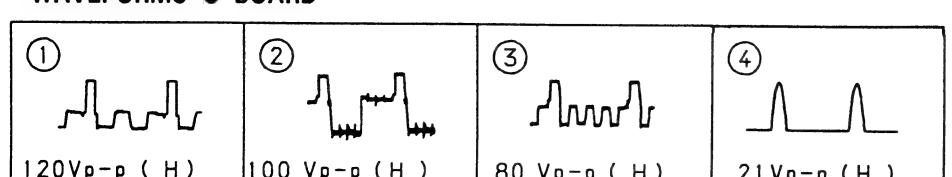


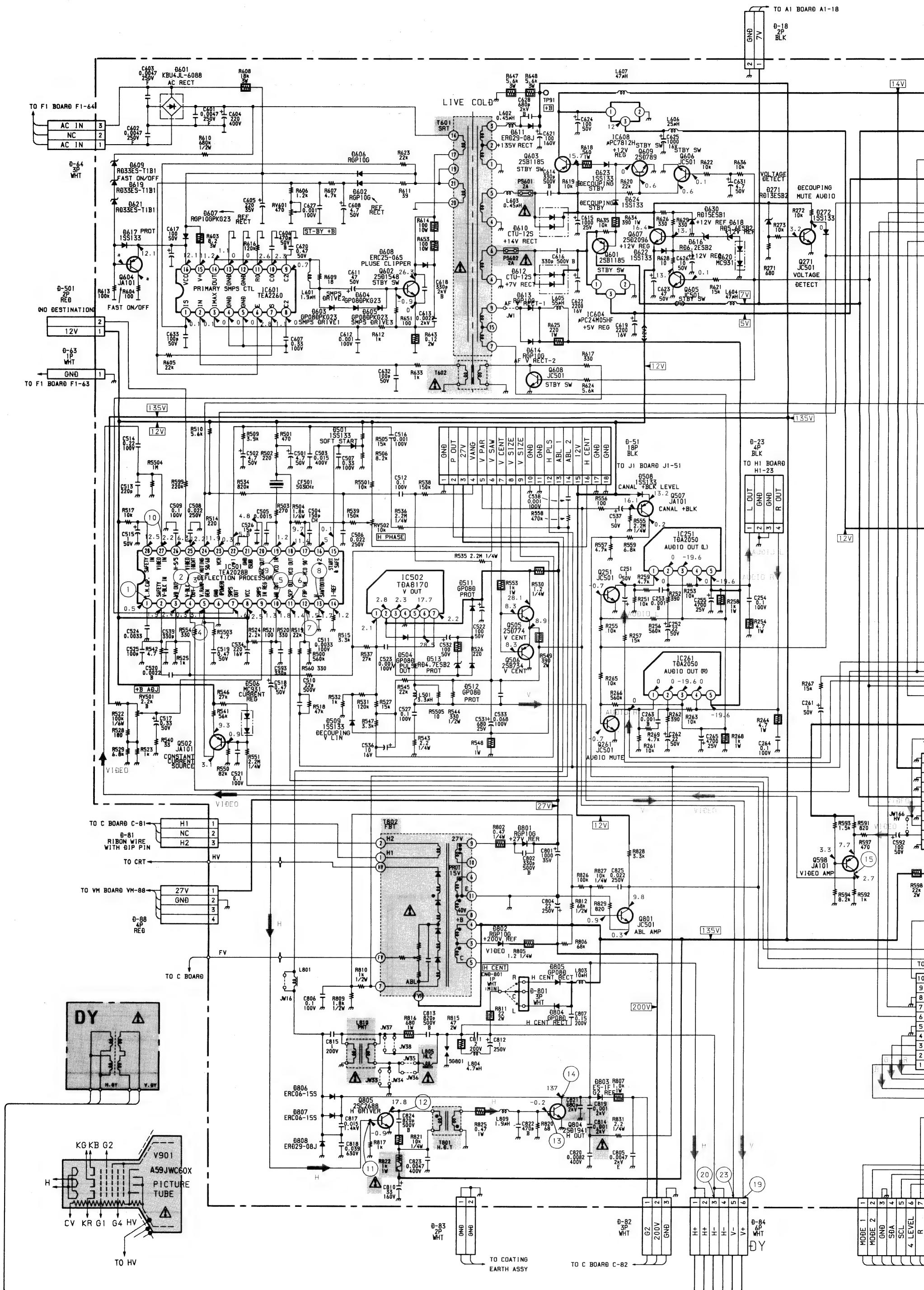
**A**

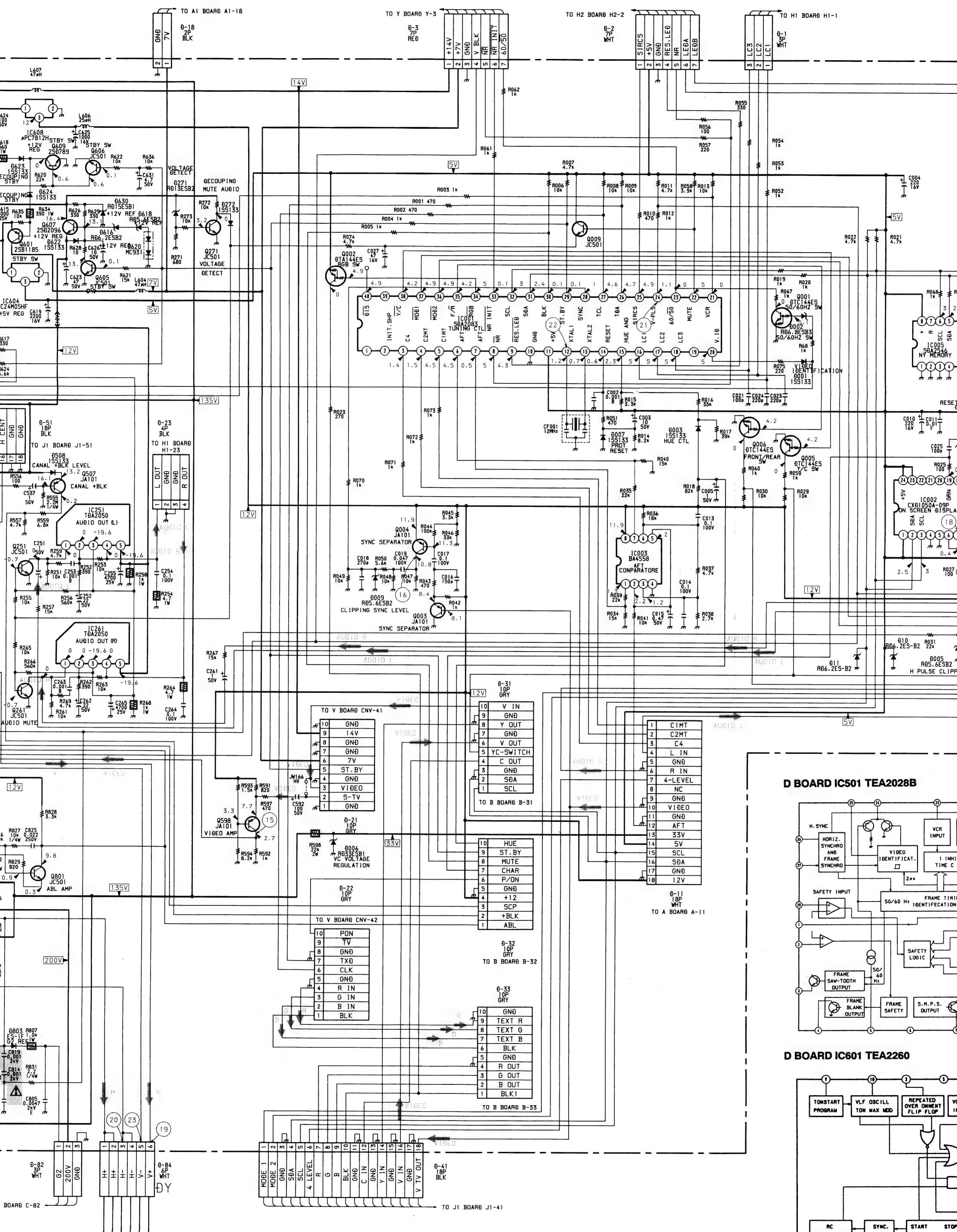
## • WAVEFORMS D BOARD

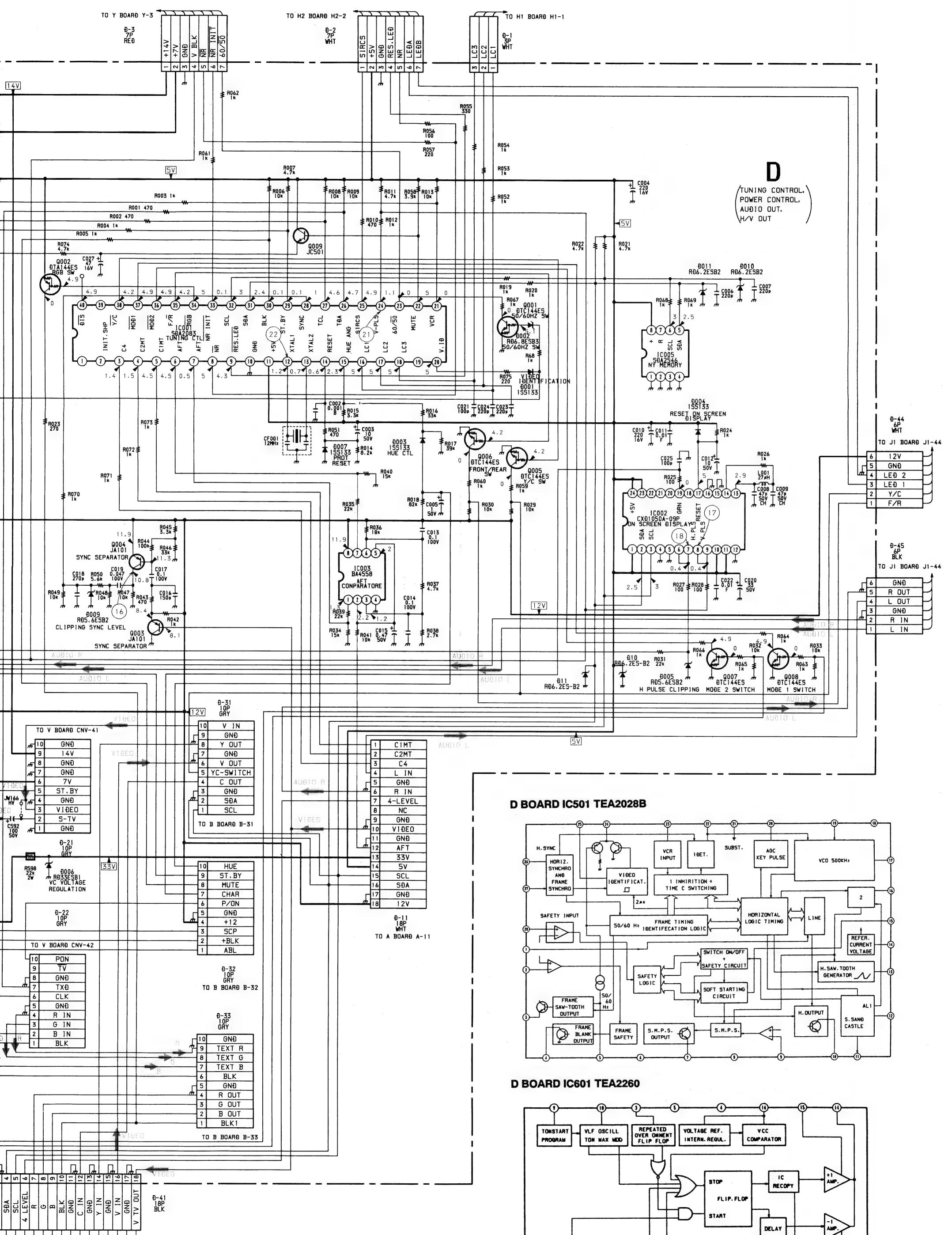
**B****C****D****E****F****G****H****I****J****K****L****M****N****O****P**

## • WAVEFORMS C BOARD



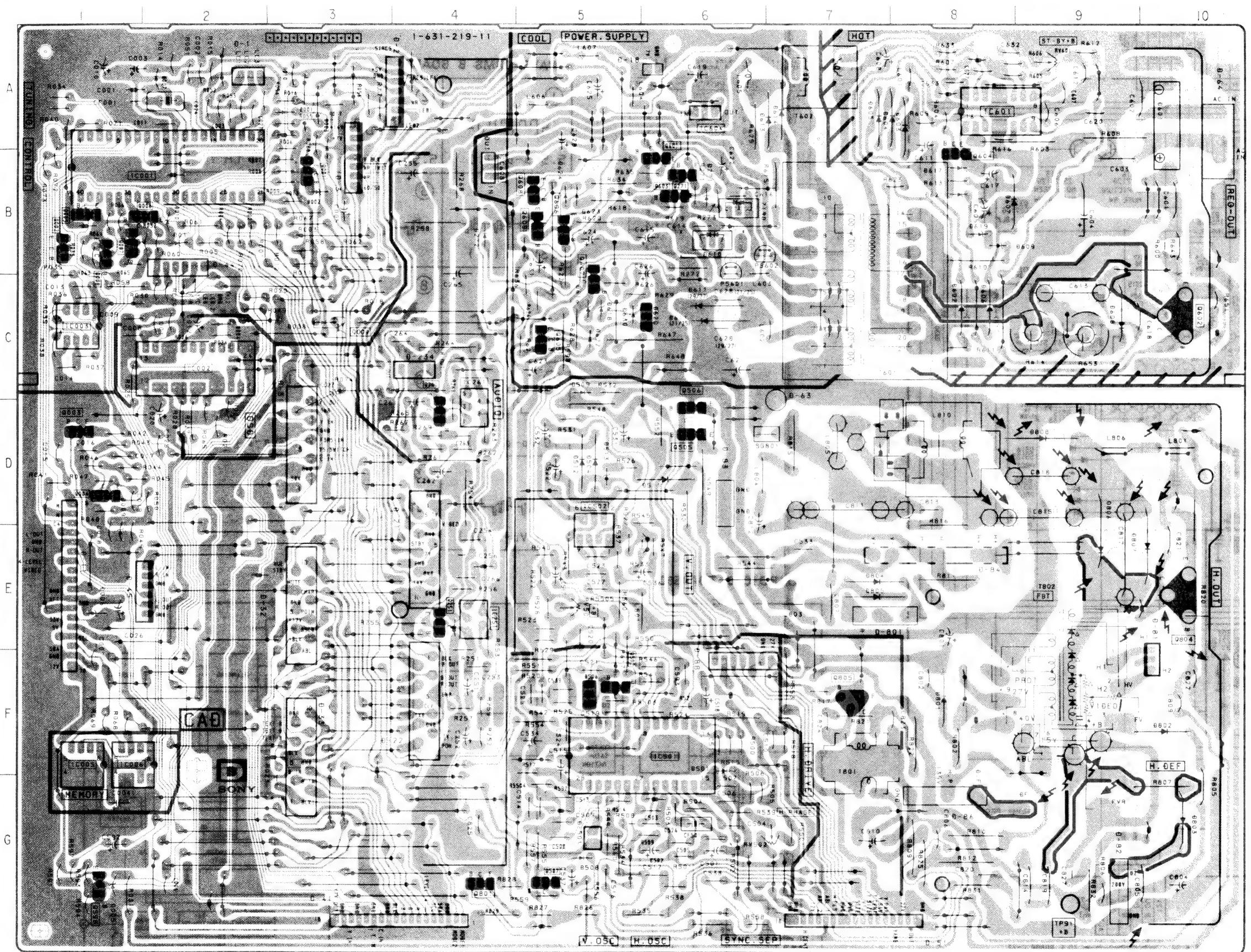






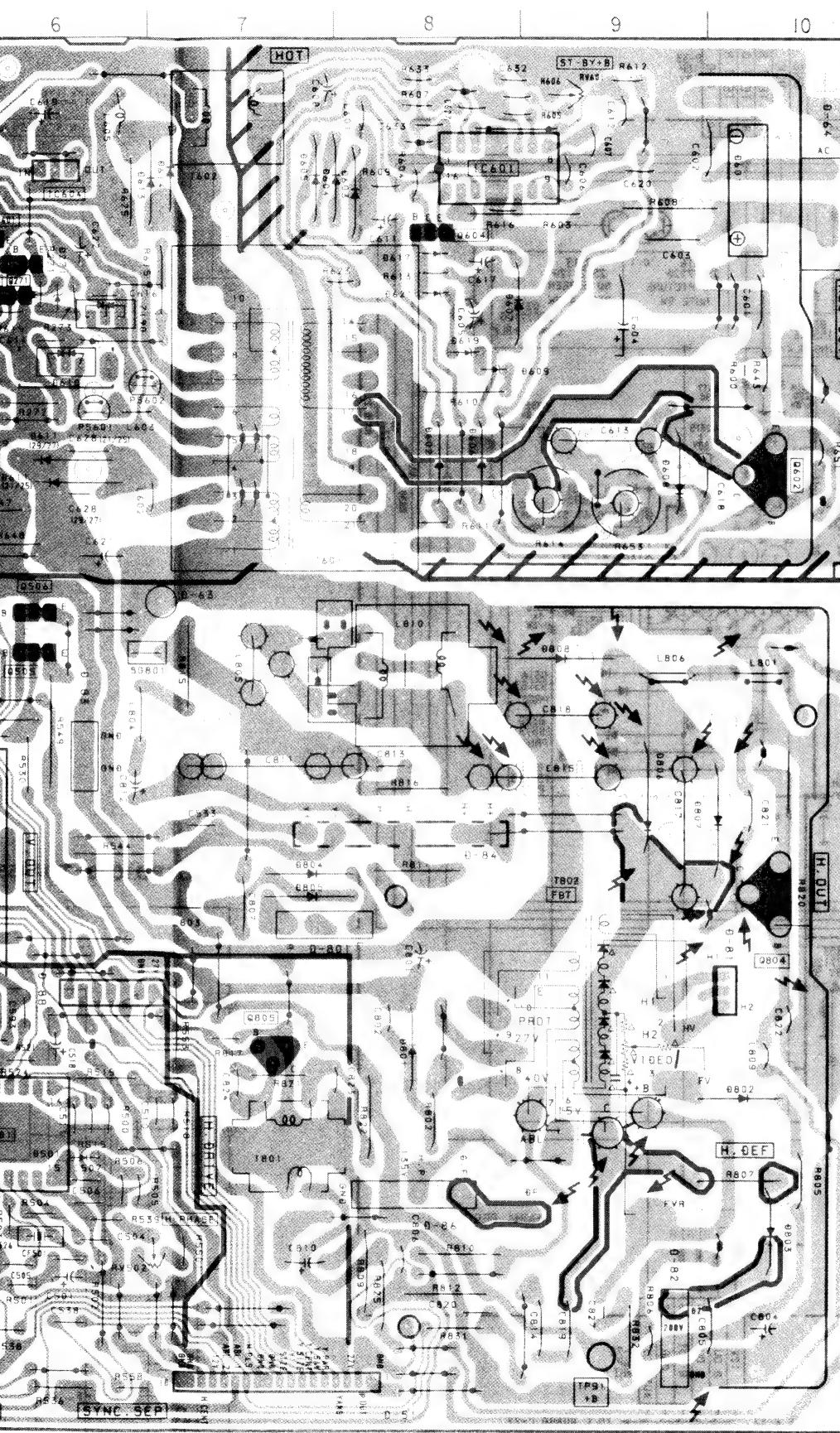
**D** [TUNING CONTROL, POWER CONTROL]  
AUDIO OUT, H/V OUT

-D Board-



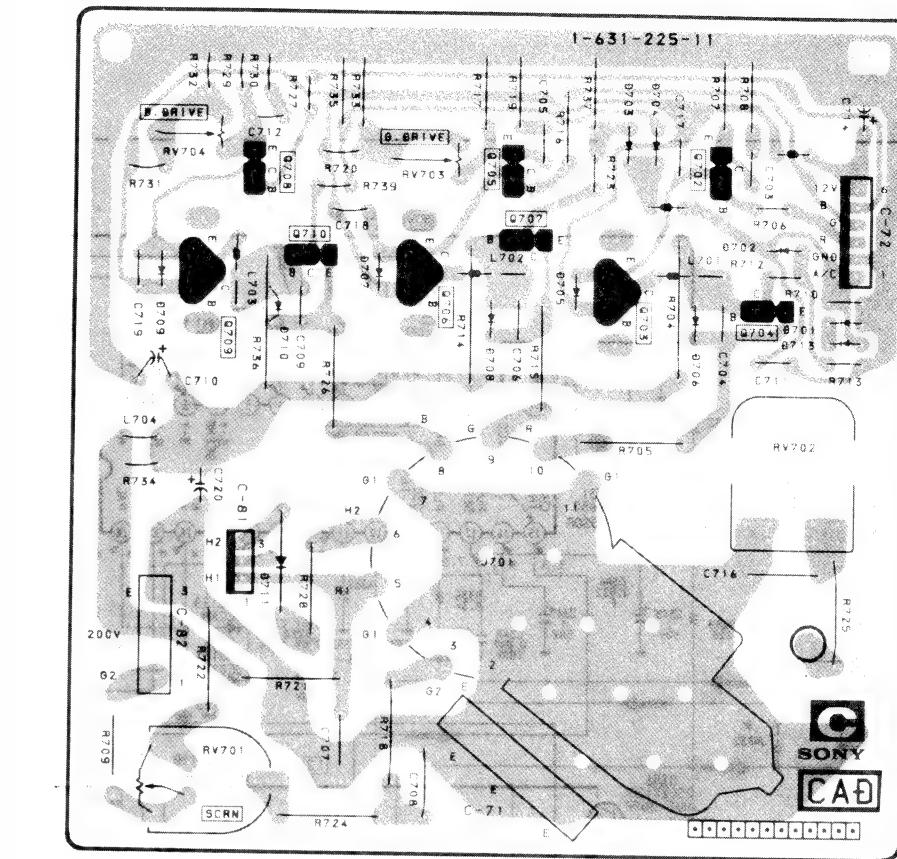
D BOARD

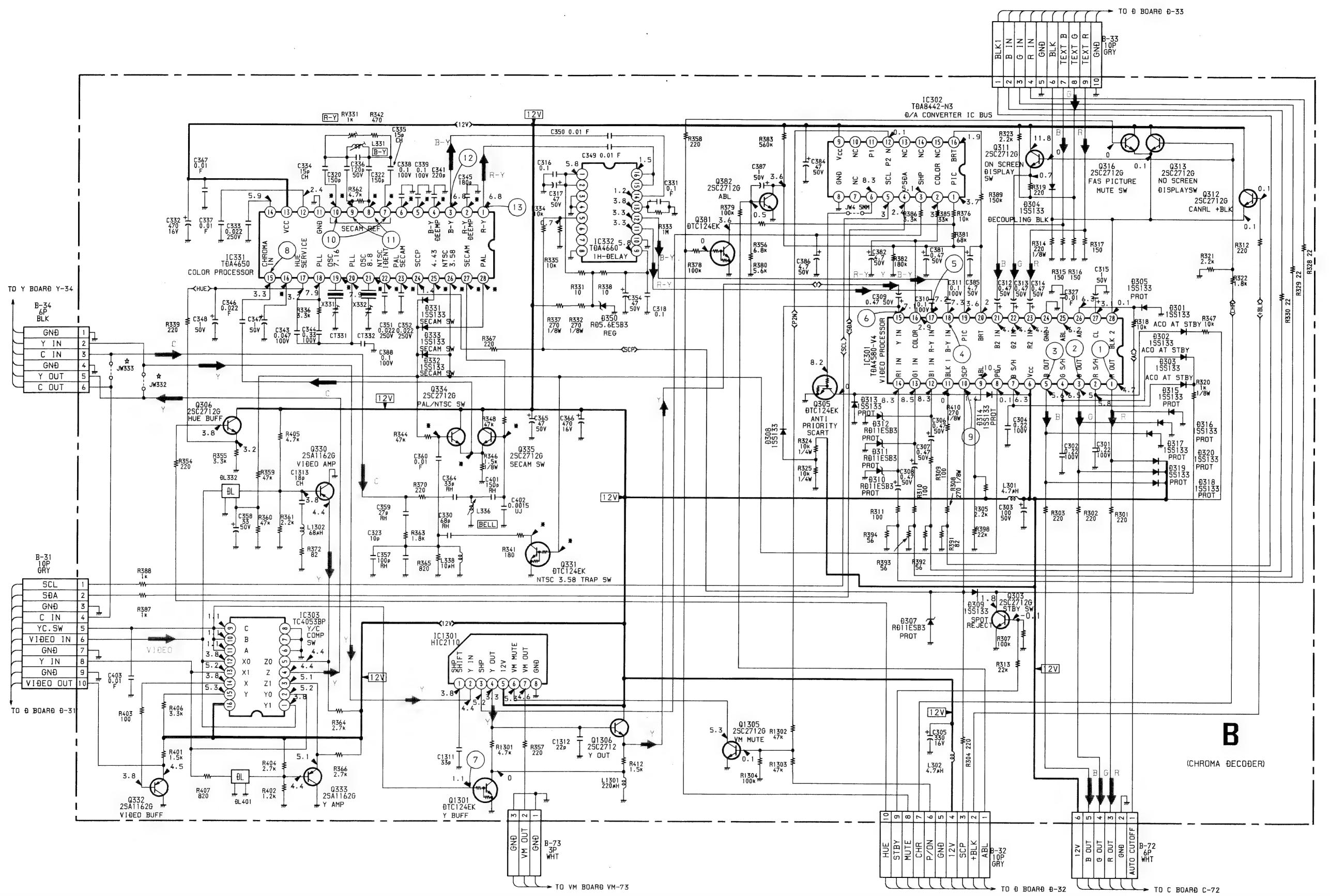
IC	DIODE	VARIABLE RESISTOR	TEST POINT
IC001	B-1	D001 A-3	RV501 E-5
IC002	C-2	D002 B-3	RV502 G-6
IC003	C-1	D003 A-3	RV601 A-9
IC005	F-1	D004 C-2	
IC006	F-1	D005 G-1	
IC251	E-4	D006 E-1	
IC261	C-4	D007 A-2	
IC501	F-6	D008 C-2	
IC502	D-6	D009 D-1	
IC601	A-8	D010 B-2	
IC604	A-6	D011 B-2	
IC608	B-4	D271 B-6	
		D272 B-4	
		D501 F-6	
		D504 D-5	
		D506 F-5	
		D508 G-5	
		D509 C-5	
		D511 D-9	
		D512 D-5	
		D513 D-5	
		D601 A-10	
		D602 C-8	
		D603 A-8	
		D604 A-7	
		D605 A-7	
		D606 C-8	
		D607 B-8	
		D608 C-9	
		D609 B-8	
		D610 B-6	
		D611 C-6	
		D612 B-6	
		D613 A-6	
		D614 A-7	
		D616 C-5	
		D617 B-8	
		D618 C-5	
		D619 B-8	
		D620 C-6	
		D621 B-8	
		D622 C-5	
		D623 B-5	
		D624 B-5	
		D630 C-5	
		D801 F-8	
		D802 F10	



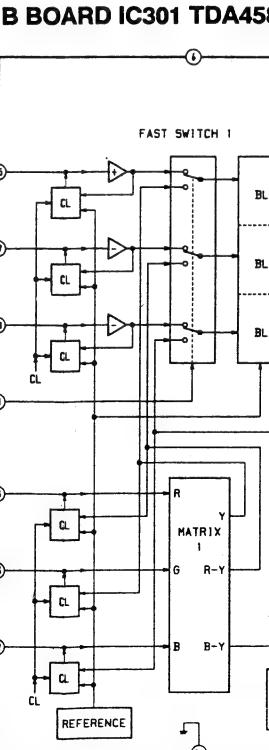
D BOA

**C** [R · G · B OUT]  
-C Board-

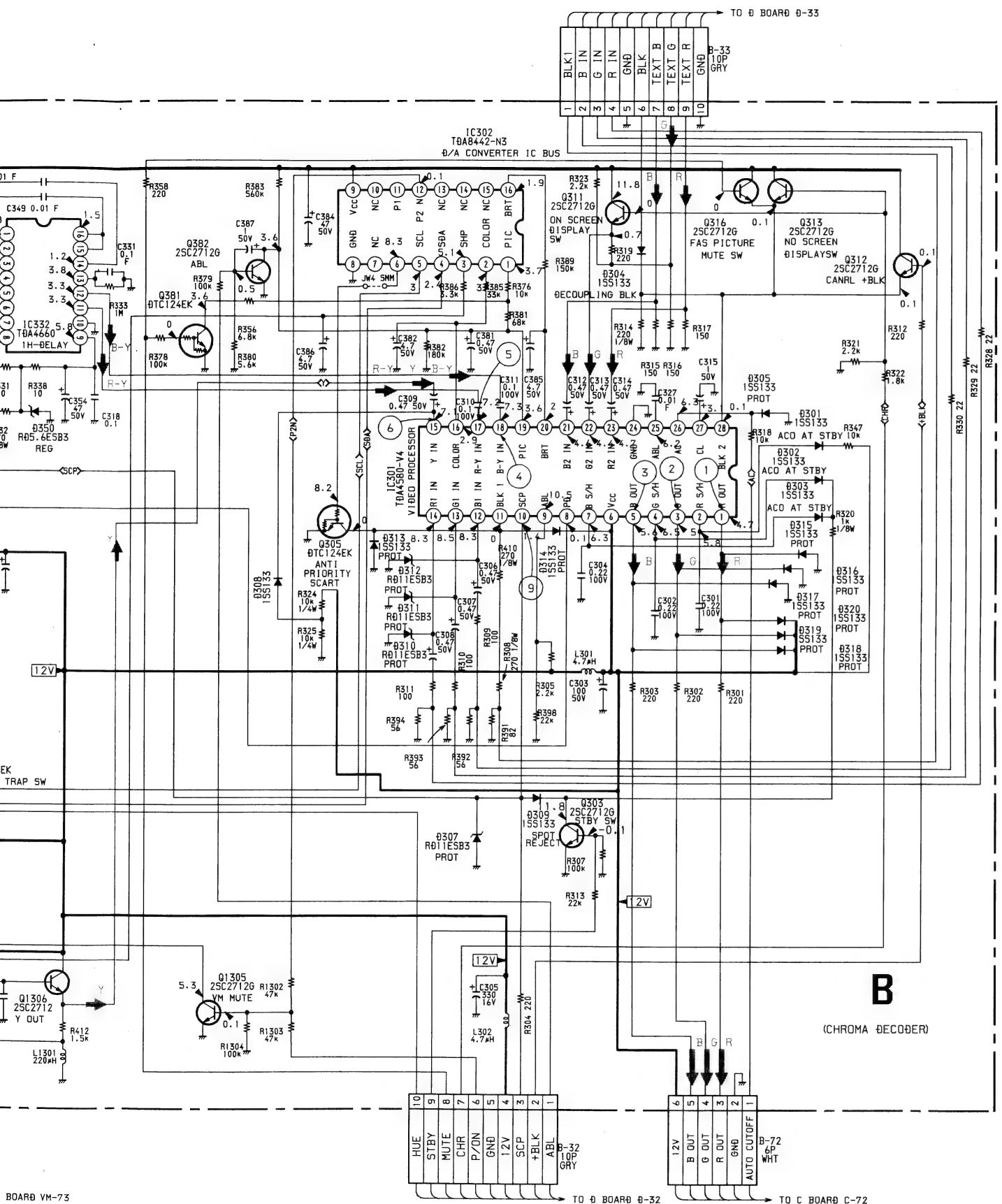




	PAL	SECAM	NTSC.5.68
331 (2)	7.5	7.3	7.5
(4)	7.5	7.2	7.5
(5)	10	10	10
(6)	10	10	10
(7)	4.9	3.4	4.9
(8)	3.7	3	3.8
(9)	3.7	3	3.8
(10)	5	3.4	4.9
331 (B)	0.1	0.1	0.1
(C)	0.5	0.5	0.5
334 (B)	4.9	0.1	4.9
(E)	4.3	4.6	4.3
335 (B)	0.1	5.3	0.1
(E)	4.3	4.6	4.3



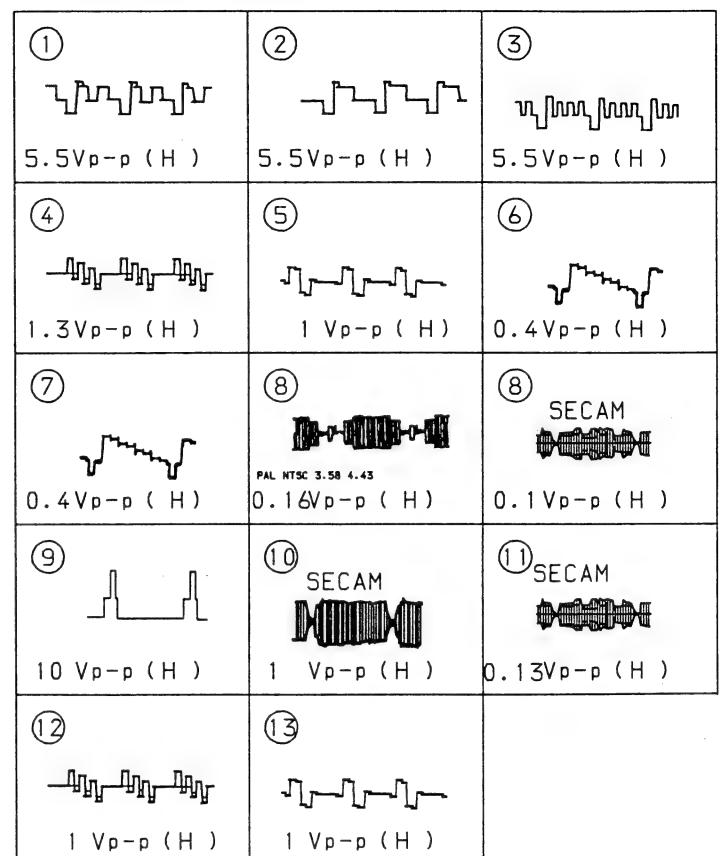
7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23



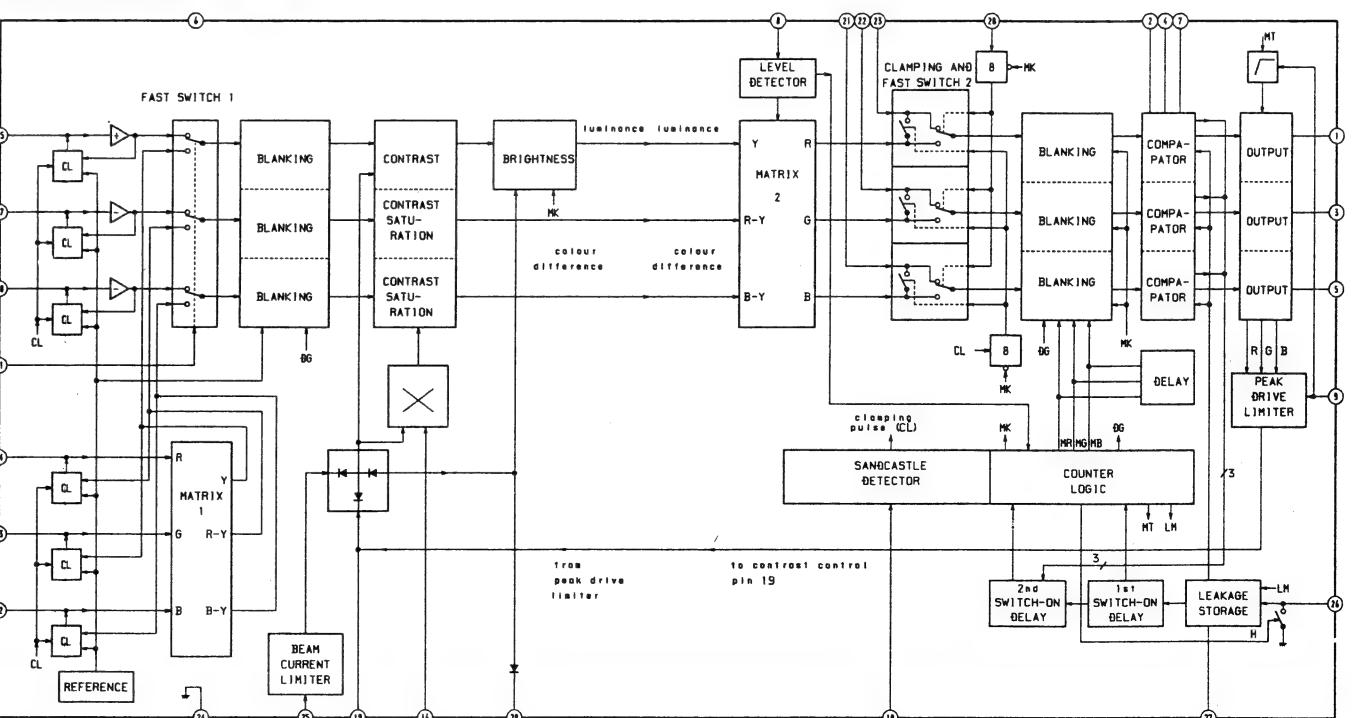
As to the voltage value shown by the mark \* on the Schematic Diagram, see the another list.

	PAL	SECAM	NTSC3.58	NTSC4.43
IC331 (2)	7.5	7.3	7.5	7.4
(4)	7.5	7.2	7.5	7.4
(5)	10	10	10	9.8
(6)	10	10	10	9.9
(7)	4.9	3.4	4.9	4.9
(8)	3.7	3	3.8	3.8
(9)	3.7	3	3.8	3.8
(10)	5	3.4	4.9	4.9
Q331 (B)	0.1	0.1	0.1	5.8
(C)	0.5	0.5	0.5	0
Q334 (B)	4.9	0.1	4.9	4.9
(E)	4.3	4.6	4.3	4.3
Q335 (B)	0.1	5.3	0.1	0.1
(E)	4.3	4.6	4.3	4.3

### • WAVEFORMS B BOARD



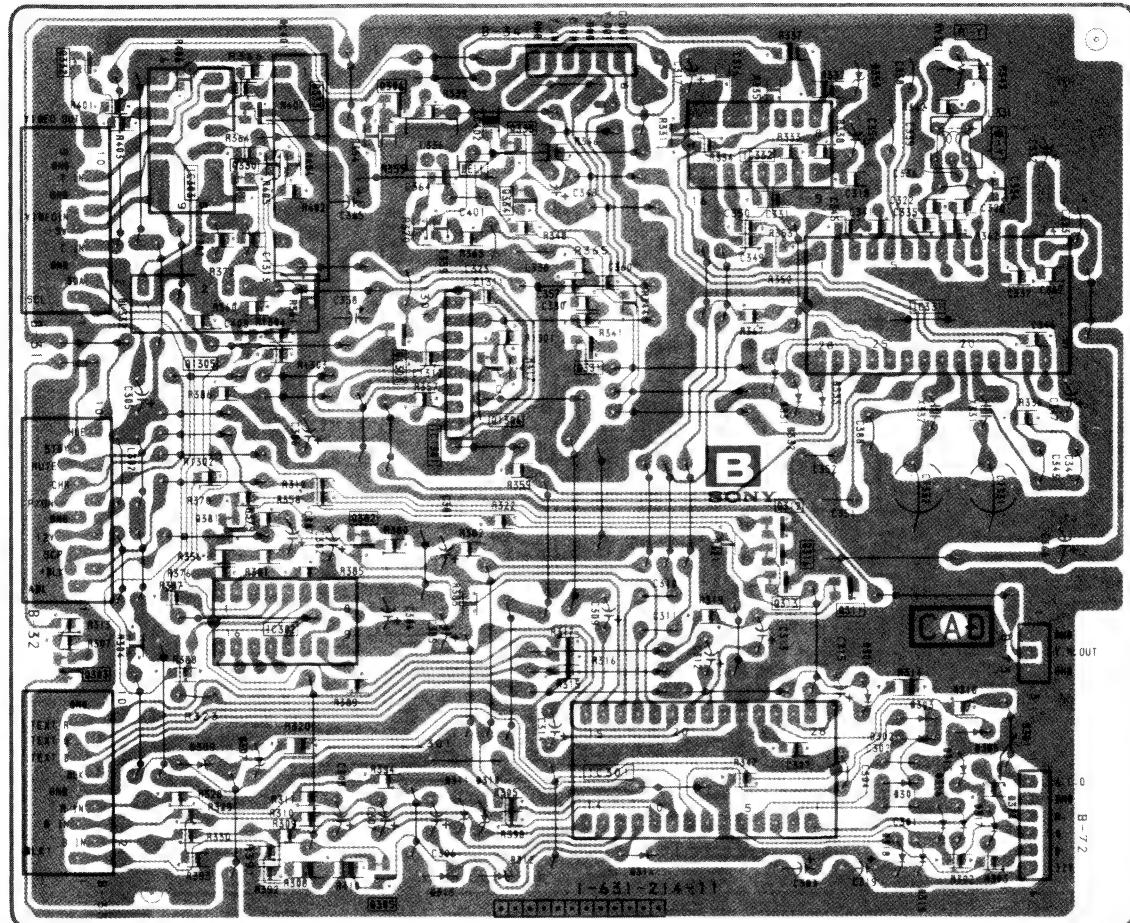
**B BOARD IC301 TDA4580**



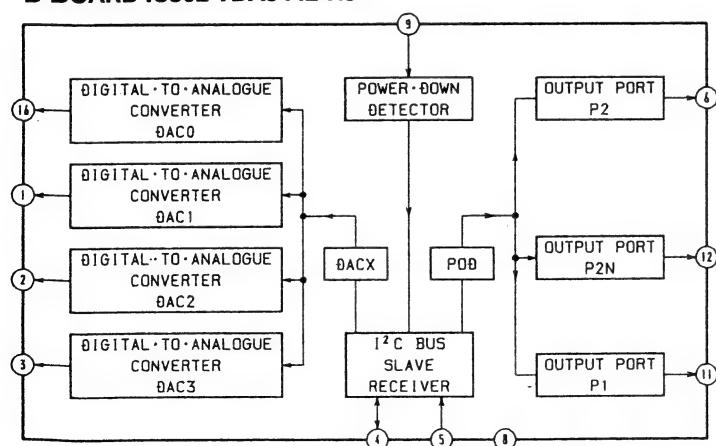
**B**

[ CHROMA  
DECODER ]

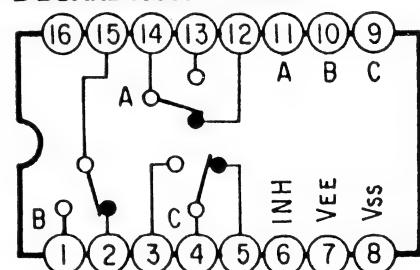
—B Board—



**B BOARD IC302 TDA8442-N3**



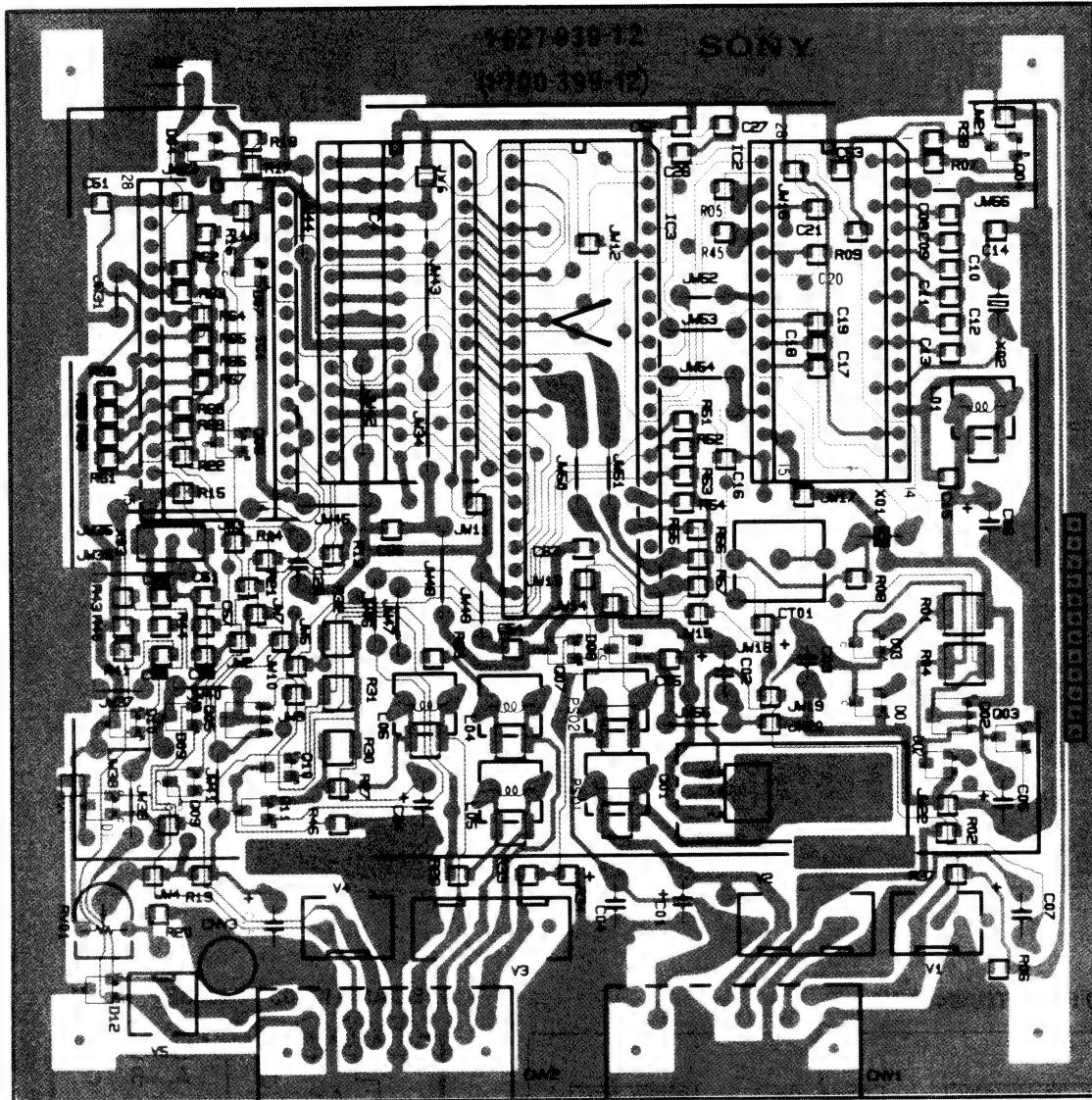
**B BOARD IC303 TC4053BP**



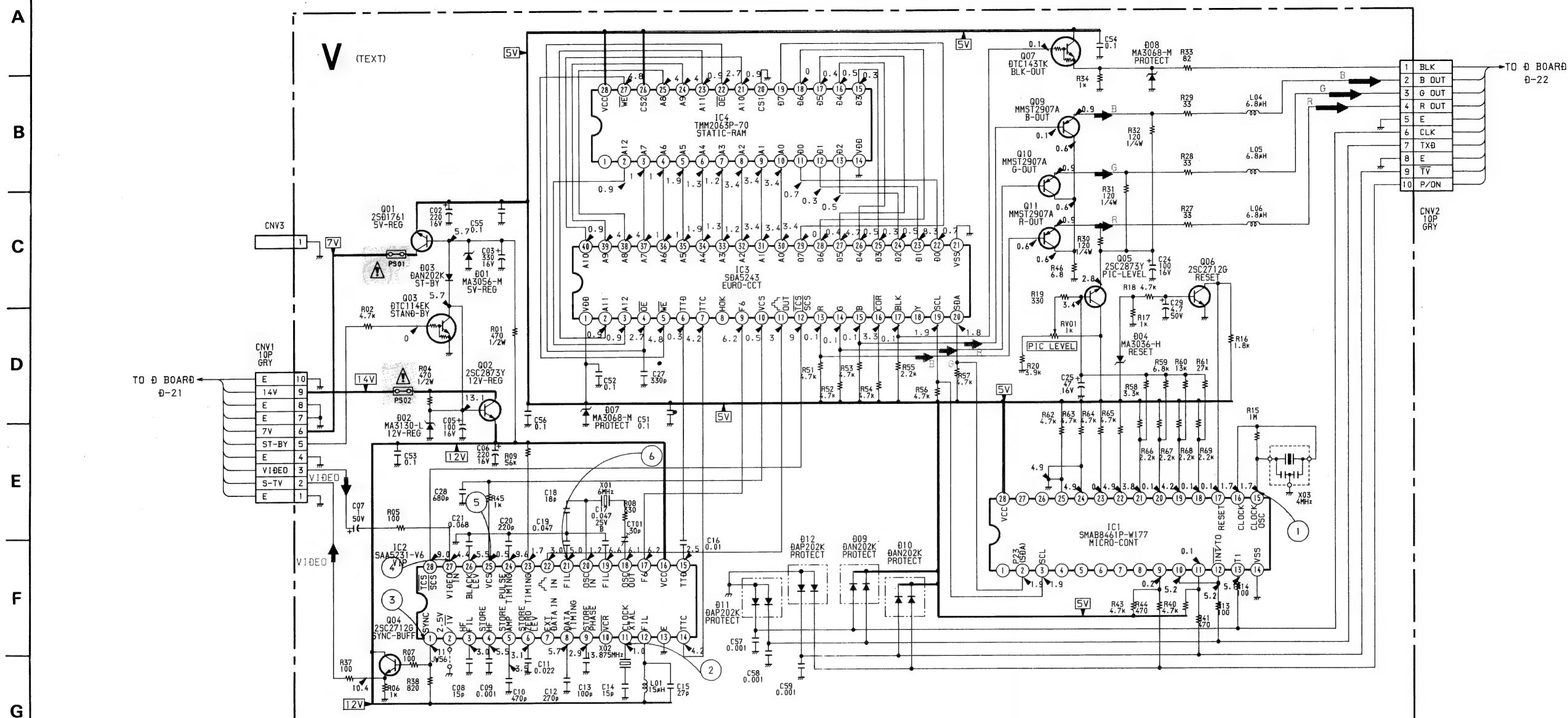
V

[TEXT]

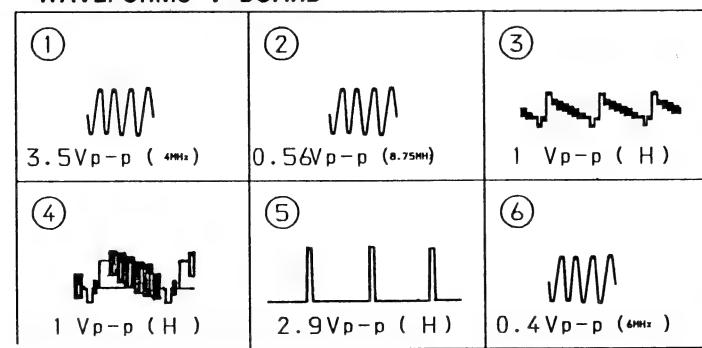
- V Board -



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

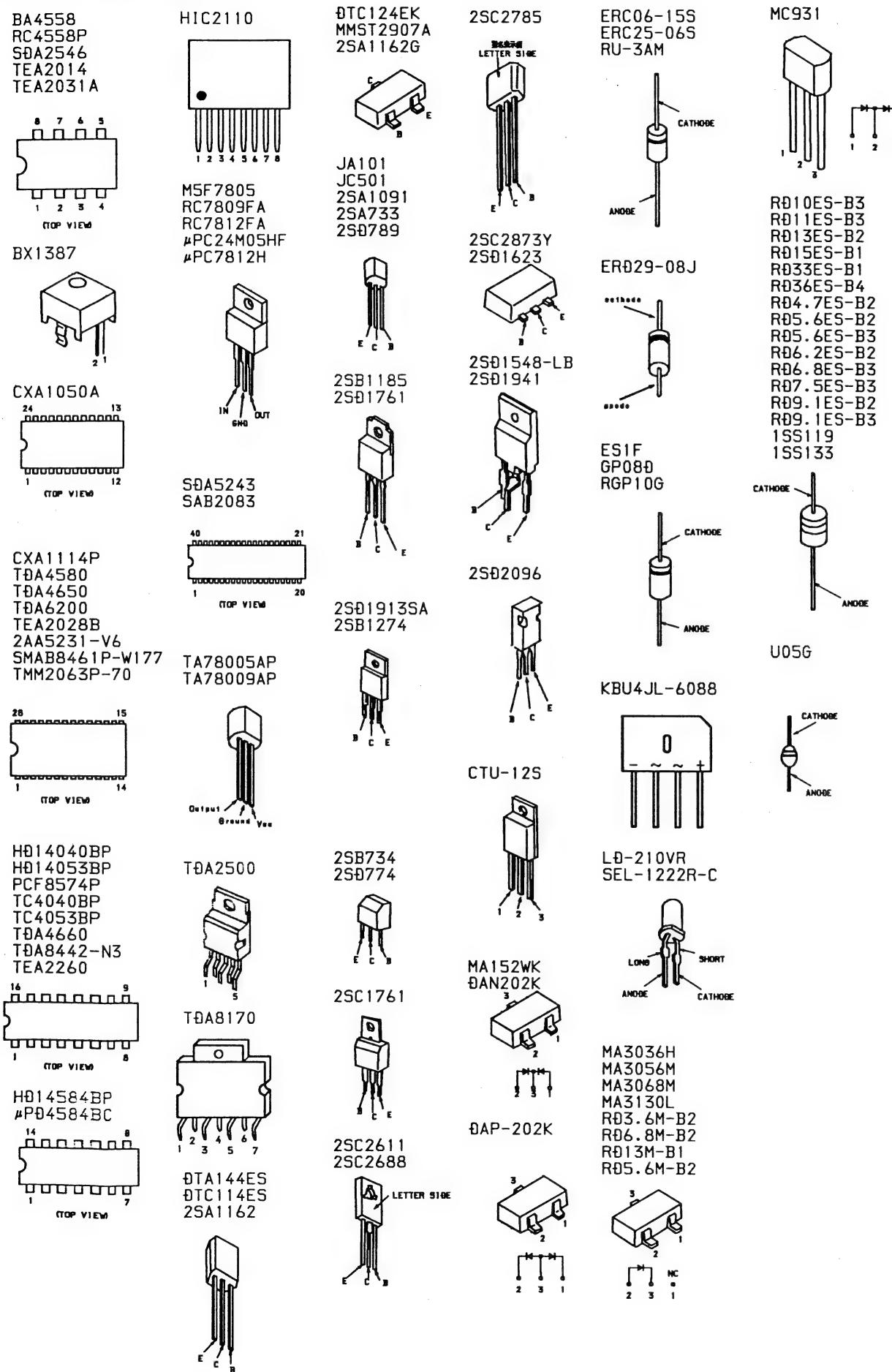


## • WAVEFORMS V BOARD



## SECTION 6 EXPLODED VIEWS

### 5-4. SEMICONDUCTORS

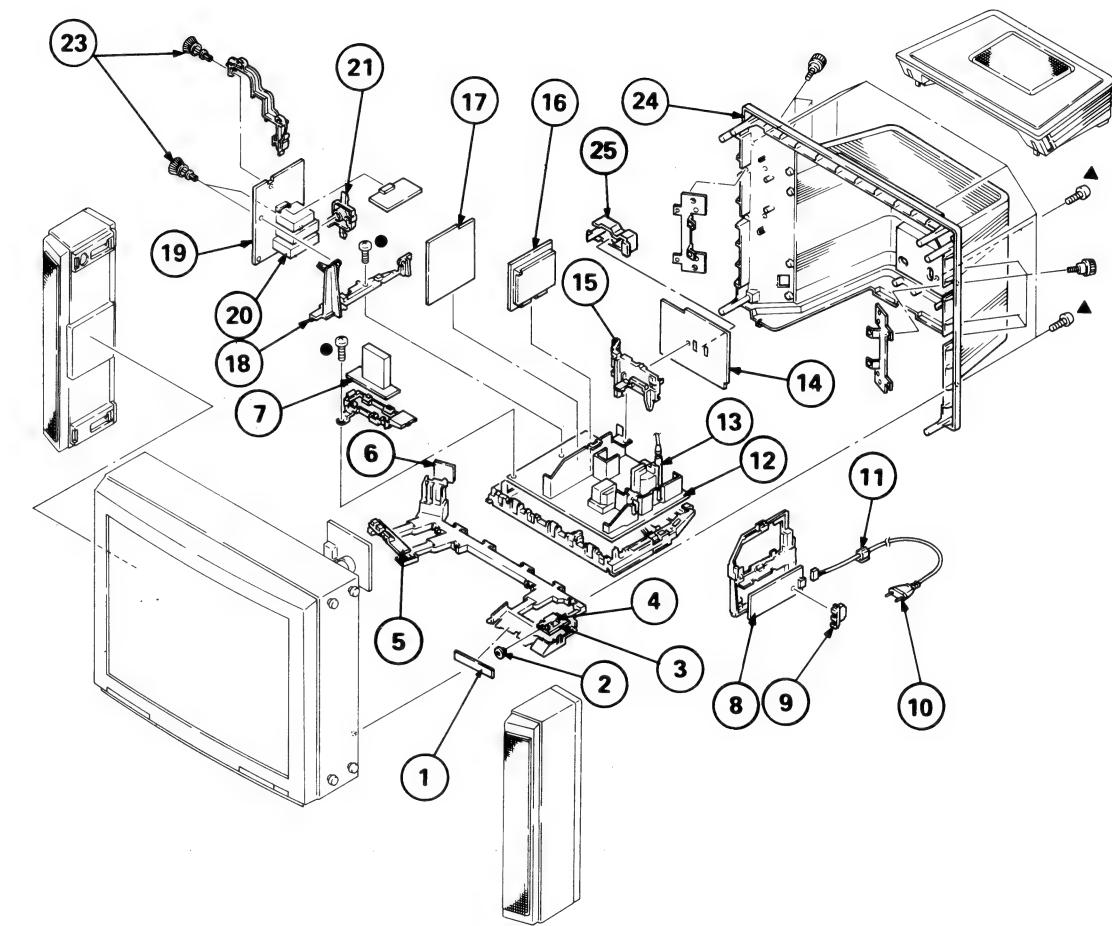

**NOTE:**

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ▲ are critical for safety.  
Replace only with part number specified.

### 6-1. CHASSIS

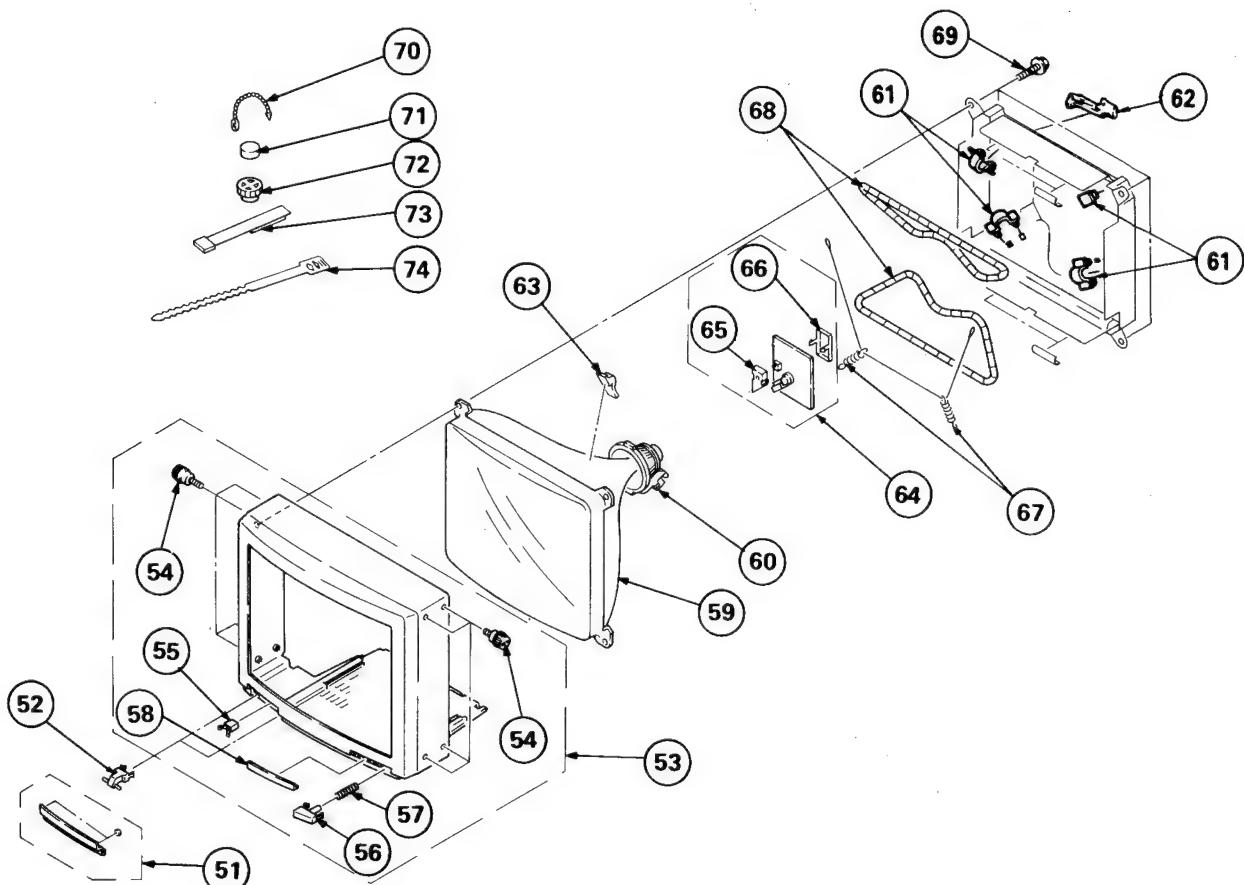
- : BVTP3 × 12 7-685-648-79  
▲: BVTP4 × 16 7-685-663-79



REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
1	*1-631-221-11	H2 BOARD		14	*A-1651-003-A	J1 BOARD, COMPLETE	
2	4-201-011-01	CAP, SWITCH		15	*4-386-624-11	BRACKET, J	
3	*1-631-223-11	F2 BOARD		16	*A-1347-031-A	V BOARD, COMPLETE	
4	▲1-571-433-11	SWITCH, PUSH (AC POWER)		17	*A-1621-001-A	B BOARD, COMPLETE	
5	*1-631-220-11	H1 BOARD		18	*4-386-629-12	BRACKET, A	
6	*1-631-222-11	J2 BOARD		19	*A-1632-001-A	A BOARD, COMPLETE	
7	*1-631-217-11	Y BOARD		20	▲1-465-301-11	TUNER, ET (UV-816 (PLL))	
8	*1-631-216-11	F1 BOARD		21	*4-386-617-01	HOLDER, TERMINAL	
9	*4-386-620-02	COVER, POWER		23	4-386-618-01	RIVET, T TYPE	
10	▲1-575-487-11	CORD, POWER (WITH NOISE FILTER)		24	4-201-017-01	COVER, REAR	
11	▲4-389-201-02	HOLDER, AC CORD		25	4-200-014-01	BRACKET, TERMINAL	
12	*A-1642-002-A	D BOARD, COMPLETE					
13	▲1-439-416-11	TRANSFORMER ASSY, FLYBACK (UX-1600)					

## 6-2. PICTURE TUBE

● : BVTP3 X 12 7-685-648-79

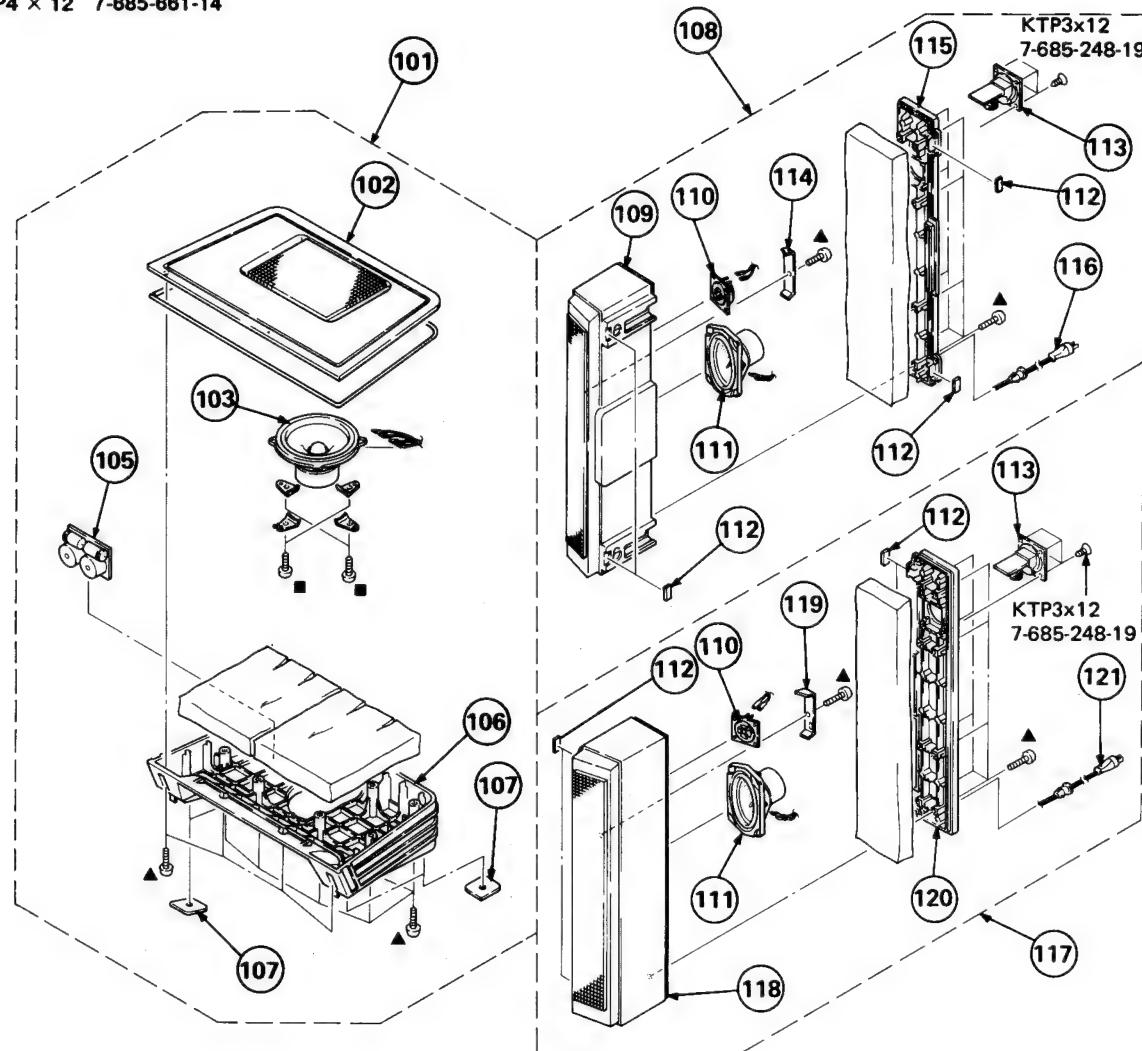


The components identified by shading and mark are critical for safety.  
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
51	X-4201-006-2	DOOR ASSY, CONTROL		64	*A-1638-002-A	C BOARD, COMPLETE	65,66
52	3-703-035-11	SHAFT, LID		65	*4-379-167-01	COVER (MAIN), CV	
53	X-4201-005-1	CABINET ASSY (WITH BEZEL ASSY)	54-58	66	*4-379-160-01	COVER (REAR LID), CV	
54	X-4374-104-1	SCREW (B) ASSY, ORNAMENTAL		67	4-303-774-99	SPRING	
55	4-386-710-01	CATCHER, PUSH		68	△ 1-426-372-11	COIL, DEMAGNETIZATION	
56	4-200-013-01	BUTTON, POWER		69	4-373-263-01	SCREW (M), PT	
57	4-329-112-21	SPRING		70	4-308-870-00	CLIP, LEAD WIRE	
58	4-200-017-12	WINDOW, ORNAMENTAL		71	1-452-032-00	MAGNET, DISK; 10MM $\phi$	
59	△ 8-733-224-05	PICTURE TUBE (A59JWC60X)		72	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM $\phi$	
60	△ 1-451-311-31	DEFLECTION YOKE (Y25FXA)		73	X-4387-214-1	PERMALLOY ASSY, CORRECTION	
61	4-385-916-01	HOLDER (D)		74	3-701-007-00	BAND, BINDING	
62	4-387-216-01	HOLDER LEAD					
63	3-703-961-01	SPACER, DY					

### 6-3. SPEAKER(L, R, WOOFER)

▲ : BVT P4 × 16 7-685-663-79  
■ : BVT P4 × 12 7-685-661-14



REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
101	*A-1678-001-A	BOX ASSY, WOOFER		102-107	112	4-200-006-01	CUSHION, FOOT
102	X-4200-004-2	BOARD ASSY, BAFFLE			113	1-236-510-21	NETWORK, DIVIDING
103	I-544-192-11	SPEAKER			114	*4-200-003-02	BRACKET (L), SPEAKER
105	I-236-549-11	NETWORK, DIVIDING			115	4-201-007-01	PANEL (L), REAR
106	4-200-027-01	BOX, WOOFER			116	1-575-025-11	CORD, SPEAKER (WITH PLUG)
107	4-200-009-01	CUSHION, FOOT		109-116	117	*A-1678-010-A	BOX ASSY (RIGHT), SPEAKER 110-113, 118-121
108	*A-1678-012-A	BOX ASSY (LEFT), SPEAKER			118	X-4201-004-1	BOX ASSY (R), SIDE
109	X-4201-003-1	BOX ASSY (L), SIDE			119	*4-200-004-02	BRACKET (R), SPEAKER
110	I-544-203-11	SPEAKER			120	4-201-006-01	PANEL (R), REAR
111	I-544-204-11	SPEAKER			121	1-575-024-11	CORD, SPEAKER (WITH PLUG)

## **SECTION 7**

### **ELECTRICAL PARTS LIST**



**NOTE :**

The components identified by shading and mark  are critical for safety.  
Replace only with part number specified.

- Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
  - All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

## RESISTORS

- All resistors are in ohms
  - F : nonflammable

When indicating parts by reference number, please include the board name.

- MF :  $\mu$ F, PF :  $\mu\mu$ F      • MMH : mH, UH :  $\mu$ H

Note: In this parts list, the mounting diagram is for a different product.  
Therefore, an excess of parts is listed.

**V** **B**

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
JW6	1-216-295-00	METAL GLAZE	0 5% 1/10W	R63	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
JW7	1-216-295-00	METAL GLAZE	0 5% 1/10W	R64	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
JW8	1-216-295-00	METAL GLAZE	0 5% 1/10W	R65	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
JW9	1-216-295-00	METAL GLAZE	0 5% 1/10W	R66	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
JW10	1-216-295-00	METAL GLAZE	0 5% 1/10W	R67	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
JW11	1-216-295-00	METAL GLAZE	0 5% 1/10W	R68	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
JW12	1-216-295-00	METAL GLAZE	0 5% 1/10W	R69	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
JW13	1-216-295-00	METAL GLAZE	0 5% 1/10W				<VARIABLE RESISTOR>
JW14	1-216-295-00	METAL GLAZE	0 5% 1/10W	RV01	1-238-012-11	RES, ADJ, CARBON 1K	
JW15	1-216-295-00	METAL GLAZE	0 5% 1/10W				<CRYSTAL>
JW16	1-216-295-00	METAL GLAZE	0 5% 1/10W	X01	1-567-162-21	OSCILLATOR, CRYSTAL	
JW17	1-216-295-00	METAL GLAZE	0 5% 1/10W	X02	1-567-495-21	OSCILLATOR, CRYSTAL	
JW18	1-216-295-00	METAL GLAZE	0 5% 1/10W	X03	1-577-082-11	VIBRATOR, CERAMIC	
JW19	1-216-295-00	METAL GLAZE	0 5% 1/10W				*****
JW20	1-216-295-00	METAL GLAZE	0 5% 1/10W				
JW21	1-216-295-00	METAL GLAZE	0 5% 1/10W				
JW22	1-216-295-00	METAL GLAZE	0 5% 1/10W				
JW23	1-216-295-00	METAL GLAZE	0 5% 1/10W				
JW24	1-216-295-00	METAL GLAZE	0 5% 1/10W				
JW25	1-216-295-00	METAL GLAZE	0 5% 1/10W				
R01	1-218-326-11	METAL GLAZE	470 5% 1/2W		*A-1621-001-A	B BOARD, COMPLETE	
R02	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W			*****	
R04	1-218-326-11	METAL GLAZE	470 5% 1/2W				
R05	1-216-025-00	METAL GLAZE	100 5% 1/10W		*1-565-393-11	CONNECTOR, BOARD TO BOARD	
R06	1-216-049-00	METAL GLAZE	1K 5% 1/10W		*1-568-878-51	PIN, CONNECTOR 3P	
R07	1-216-025-00	METAL GLAZE	100 5% 1/10W		*1-568-881-51	PIN, CONNECTOR 6P	
R08	1-216-037-00	METAL GLAZE	330 5% 1/10W		*1-568-881-61	PIN, CONNECTOR 6P	
R09	1-216-091-00	METAL GLAZE	56K 5% 1/10W				
R13	1-216-025-00	METAL GLAZE	100 5% 1/10W				
R14	1-216-025-00	METAL GLAZE	100 5% 1/10W				
R15	1-216-121-00	METAL GLAZE	1M 5% 1/10W				
R16	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W				
R17	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R18	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R19	1-216-037-00	METAL GLAZE	330 5% 1/10W				
R20	1-216-063-00	METAL GLAZE	3.9K 5% 1/10W				
R27	1-216-013-00	METAL GLAZE	33 5% 1/10W				
R28	1-216-013-00	METAL GLAZE	33 5% 1/10W				
R29	1-216-013-00	METAL GLAZE	33 5% 1/10W				
R30	1-218-325-11	METAL GLAZE	120 5% 1/4W				
R31	1-218-325-11	METAL GLAZE	120 5% 1/4W				
R32	1-218-325-11	METAL GLAZE	120 5% 1/4W				
R33	1-216-023-00	METAL GLAZE	82 5% 1/10W				
R34	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R37	1-216-025-00	METAL GLAZE	100 5% 1/10W				
R38	1-216-047-00	METAL GLAZE	820 5% 1/10W				
R40	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R41	1-216-041-00	METAL GLAZE	470 5% 1/10W				
R43	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R44	1-216-041-00	METAL GLAZE	470 5% 1/10W				
R45	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R46	1-216-311-00	METAL GLAZE	6.8 5% 1/10W				
R51	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R52	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R53	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R54	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R55	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W				
R56	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R57	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R58	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W				
R59	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W				
R60	1-216-076-00	METAL GLAZE	13K 5% 1/10W				
R61	1-216-083-00	METAL GLAZE	27K 5% 1/10W				
R62	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
				C301	1-106-228-00	MYLAR	0.22MF 10% 100V
				C302	1-106-228-00	MYLAR	0.22MF 10% 100V
				C303	1-124-122-11	ELECT	100MF 20% 50V
				C304	1-106-228-00	MYLAR	0.22MF 10% 100V
				C305	1-124-119-00	ELECT	330MF 20% 16V
				C306	1-124-902-00	ELECT	0.47MF 20% 50V
				C307	1-124-902-00	ELECT	0.47MF 20% 50V
				C308	1-124-902-00	ELECT	0.47MF 20% 50V
				C309	1-124-902-00	ELECT	0.47MF 20% 50V
				C310	1-106-220-00	MYLAR	0.1MF 10% 100V
				C311	1-106-220-00	MYLAR	0.1MF 10% 100V
				C312	1-124-902-00	ELECT	0.47MF 20% 50V
				C313	1-124-902-00	ELECT	0.47MF 20% 50V
				C314	1-124-902-00	ELECT	0.47MF 20% 50V
				C315	1-124-791-11	ELECT	1MF 20% 50V
				C316	1-163-038-00	CERAMIC CHIP	0.1MF 25V
				C317	1-124-910-11	ELECT	47MF 20% 50V
				C318	1-163-038-00	CERAMIC CHIP	0.1MF 25V
				C320	1-163-121-00	CERAMIC CHIP	150PF 5% 50V
				C322	1-163-121-00	CERAMIC CHIP	150PF 5% 50V
				C323	1-102-947-00	CERAMIC	10PF 0.5PF 50V
				C327	1-164-232-11	CERAMIC CHIP	0.01MF 50V
				C330	1-163-113-00	CERAMIC CHIP	68PF 5% 50V
				C331	1-163-077-00	CERAMIC CHIP	0.1MF 50V
				C332	1-126-103-11	ELECT	470MF 20% 16V
				C333	1-106-375-12	MYLAR	0.022MF 10% 250V
				C334	1-163-097-00	CERAMIC CHIP	15PF 5% 50V
				C335	1-163-097-00	CERAMIC CHIP	15PF 5% 50V
				C336	1-102-816-00	CERAMIC	120PF 5% 50V
				C337	1-164-232-11	CERAMIC CHIP	0.01MF 50V
				C338	1-106-220-00	MYLAR	0.1MF 10% 100V
				C339	1-106-220-00	MYLAR	0.1MF 10% 100V
				C341	1-163-125-00	CERAMIC CHIP	220PF 5% 50V
				C343	1-106-383-00	MYLAR	0.047MF 10% 100V
				C344	1-130-783-00	MYLAR	0.33MF 10% 100V

**B**

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK	
<DELAY LINE>								
C345	1-163-123-00	CERAMIC CHIP 180PF	5%	50V	DL332	1-236-062-11	MODULE, Y DELAY LINE	
C346	1-163-033-00	CERAMIC CHIP 0.022MF		50V	DL401	1-415-613-11	DELAY LINE, Y	
C347	1-124-791-11	ELECT 1MF	20%	50V				
C348	1-124-791-11	ELECT 1MF	20%	50V				
C349	1-164-232-11	CERAMIC CHIP 0.01MF		50V				
<IC>								
C350	1-164-232-11	CERAMIC CHIP 0.01MF		50V	IC301	8-759-979-85	IC TDA4580-V4	
C351	1-106-375-12	MYLAR 0.022MF	10%	250V	IC302	8-759-980-60	IC TDA442-N3	
C352	1-106-375-12	MYLAR 0.022MF	10%	250V	IC303	8-759-240-53	IC TC4053BP	
C353	1-106-375-12	MYLAR 0.022MF		250V	IC331	8-759-990-29	IC TDA4650	
C354	1-124-910-11	ELECT 47MF	20%	50V	IC332	8-759-990-30	IC TDA4660	
C357	1-163-117-00	CERAMIC CHIP 100PF	5%	50V				
C358	1-124-917-11	ELECT 33MF	20%	50V	IC1301	1-235-534-21	CONTROL MODULE, PICTURE	
C359	1-163-103-00	CERAMIC CHIP 27PF	5%	50V				
C360	1-164-232-11	CERAMIC CHIP 0.01MF		50V				
C364	1-163-105-00	CERAMIC CHIP 33PF	5%	50V				
C365	1-124-910-11	ELECT 47MF	20%	50V				
C366	1-126-103-11	ELECT 470MF	20%	16V	L301	1-410-868-21	INDUCTOR	4.7UH
C367	1-164-232-11	CERAMIC CHIP 0.01MF		50V	L302	1-410-868-21	INDUCTOR	4.7UH
C381	1-124-902-00	ELECT 0.47MF	20%	50V	L331	1-404-554-11	COIL	
C382	1-124-927-11	ELECT 4.7MF	20%	50V	L336	1-404-554-11	COIL	
C384	1-124-910-11	ELECT 47MF	20%	50V	L338	1-408-409-00	INDUCTOR	10UH
C385	1-124-927-11	ELECT 4.7MF	20%	50V	L1301	1-408-425-00	INDUCTOR	220UH
C386	1-124-927-11	ELECT 4.7MF	20%	50V	L1302	1-408-419-00	INDUCTOR	68UH
C387	1-124-791-11	ELECT 1MF	20%	50V				
C388	1-106-220-00	MYLAR 0.1MF	10%	100V				
C401	1-101-361-00	CERAMIC 150PF	5%	50V				
C402	1-163-197-00	CERAMIC CHIP 470PF	5%	50V	Q303	8-729-271-22	TRANSISTOR 2SC2712-G	
C403	1-164-232-11	CERAMIC CHIP 0.01MF		50V	Q305	8-729-901-00	TRANSISTOR DTC124EK	
C1311	1-163-105-00	CERAMIC CHIP 33PF	5%	50V	Q306	8-729-271-22	TRANSISTOR 2SC2712-G	
C1312	1-163-101-00	CERAMIC CHIP 22PF	5%	50V	Q311	8-729-271-22	TRANSISTOR 2SC2712-G	
C1313	1-102-953-00	CERAMIC 18PF	5%	50V	Q312	8-729-271-22	TRANSISTOR 2SC2712-G	
<TRANSISTOR>								
CT331	1-141-181-11	CAP, TRIMMER			Q313	8-729-271-22	TRANSISTOR 2SC2712-G	
CT332	1-141-181-11	CAP, TRIMMER			Q316	8-729-271-22	TRANSISTOR 2SC2712-G	
<TRIMMER>								
D301	8-719-911-19	DIODE ISS119			Q330	8-729-216-22	TRANSISTOR 2SA1162	
D302	8-719-911-19	DIODE ISS119			Q331	8-729-901-00	TRANSISTOR DTC124EK	
D303	8-719-911-19	DIODE ISS119			Q332	8-729-216-22	TRANSISTOR 2SA1162	
D304	8-719-911-19	DIODE ISS119						
D305	8-719-911-19	DIODE ISS119			Q333	8-729-216-22	TRANSISTOR 2SA1162	
D307	8-719-110-23	DIODE RD11ES-B3			Q334	8-729-271-22	TRANSISTOR 2SC2712-G	
D308	8-719-911-19	DIODE ISS119			Q335	8-729-271-22	TRANSISTOR 2SC2712-G	
D309	8-719-911-19	DIODE ISS119			Q336	8-729-900-36	TRANSISTOR DTC124ES	
D310	8-719-110-23	DIODE RD11ES-B3			Q381	8-729-901-00	TRANSISTOR DTC124EK	
D311	8-719-110-23	DIODE RD11ES-B3						
D312	8-719-110-23	DIODE RD11ES-B3			Q382	8-729-271-22	TRANSISTOR 2SC2712-G	
D313	8-719-911-19	DIODE ISS119			Q1301	8-729-901-00	TRANSISTOR DTC124EK	
D314	8-719-911-19	DIODE ISS119			Q1305	8-729-271-22	TRANSISTOR 2SC2712-G	
D315	8-719-911-19	DIODE ISS119			Q1306	8-729-271-22	TRANSISTOR 2SC2712-G	
D316	8-719-911-19	DIODE ISS119						
D317	8-719-911-19	DIODE ISS119						
D318	8-719-911-19	DIODE ISS119						
D319	8-719-911-19	DIODE ISS119						
D320	8-719-911-19	DIODE ISS119						
D331	8-719-911-19	DIODE ISS119						
D332	8-719-911-19	DIODE ISS119						
D333	8-719-911-19	DIODE ISS119						
D350	8-719-109-90	DIODE RD5.6ES-B3						
<RESISTOR>								
R301	1-216-033-00	METAL GLAZE	220	5%	R307	1-216-097-00	METAL GLAZE	100K 5%
R302	1-216-033-00	METAL GLAZE	220	5%	R308	1-216-184-00	METAL GLAZE	270 5%
R303	1-216-033-00	METAL GLAZE	220	5%	R309	1-216-025-00	METAL GLAZE	100 5%
R304	1-216-033-00	METAL GLAZE	220	5%	R310	1-216-025-00	METAL GLAZE	100 5%
R305	1-216-057-00	METAL GLAZE	2.2K	5%	R311	1-216-025-00	METAL GLAZE	100 5%
R307	1-216-097-00	METAL GLAZE	100K	5%	R312	1-216-033-00	METAL GLAZE	220 5%
R308	1-216-184-00	METAL GLAZE	270	5%	R313	1-216-081-00	METAL GLAZE	22K 5%
R309	1-216-025-00	METAL GLAZE	100	5%	R314	1-216-182-00	METAL GLAZE	220 5%
R310	1-216-025-00	METAL GLAZE	100	5%	R315	1-216-031-00	METAL GLAZE	180 5%
R311	1-216-025-00	METAL GLAZE	100	5%	R316	1-216-031-00	METAL GLAZE	180 5%
R312	1-216-033-00	METAL GLAZE	220	5%	R317	1-216-031-00	METAL GLAZE	180 5%
R313	1-216-081-00	METAL GLAZE	22K	5%	R318	1-216-073-00	METAL GLAZE	10K 5%
R314	1-216-182-00	METAL GLAZE	220	5%	R319	1-216-033-00	METAL GLAZE	220 5%
R315	1-216-031-00	METAL GLAZE	180	5%				
R316	1-216-031-00	METAL GLAZE	180	5%				
R317	1-216-031-00	METAL GLAZE	180	5%				
R318	1-216-073-00	METAL GLAZE	10K	5%				
R319	1-216-033-00	METAL GLAZE	220	5%				

The components identified by shading and mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

B F1

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R320	1-216-198-00	METAL GLAZE	1K 5% 1/8W	R407	1-216-047-00	METAL GLAZE	820 5% 1/10W
R321	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R410	1-216-184-00	METAL GLAZE	270 5% 1/8W
R322	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W	R412	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R323	1-249-422-11	CARBON	2.7K 5% 1/4W	R1301	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R324	1-249-429-11	CARBON	10K 5% 1/4W	R1302	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R325	1-249-429-11	CARBON	10K 5% 1/4W	R1303	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R328	1-216-009-00	METAL GLAZE	22 5% 1/10W	R1304	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R329	1-216-009-00	METAL GLAZE	22 5% 1/10W				<VARIABLE RESISTOR>
R330	1-216-009-00	METAL GLAZE	22 5% 1/10W	RV331	1-238-012-11	RES, ADJ, CARBON 1K	
R331	1-216-001-00	METAL GLAZE	10 5% 1/10W				<CRYSTAL>
R332	1-216-184-00	METAL GLAZE	270 5% 1/8W	X331	1-567-307-11	OSCILLATOR, CRYSTAL	
R333	1-216-121-00	METAL GLAZE	1M 5% 1/10W	X332	1-567-131-00	OSCILLATOR, CRYSTAL	
R334	1-216-073-00	METAL GLAZE	10K 5% 1/10W				*****
R335	1-216-073-00	METAL GLAZE	10K 5% 1/10W	*1-631-216-11	F1 BOARD		
R336	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W				*****
R337	1-216-184-00	METAL GLAZE	270 5% 1/8W	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P		
R338	1-216-001-00	METAL GLAZE	10 5% 1/10W	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P		
R339	1-216-033-00	METAL GLAZE	220 5% 1/10W	*1-565-395-11	PIN, CONNECTOR 3P		
R340	1-247-903-00	CARBON	1M 5% 1/4W	*1-566-664-11	PIN, CONNECTOR 4P		
R341	1-216-031-00	METAL GLAZE	180 5% 1/10W	*1-568-106-11	PIN, CONNECTOR 4P		
R342	1-216-041-00	METAL GLAZE	470 5% 1/10W	*1-568-878-51	PIN, CONNECTOR 3P		
R344	1-216-089-00	METAL GLAZE	47K 5% 1/10W				<CAPACITOR>
R346	1-216-202-00	METAL GLAZE	1.5K 5% 1/8W	C1601A 1-136-518-11	FILM	0.33MF	20% 300V
R347	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C1602A 1-136-519-11	FILM	0.47MF	20% 300V
R348	1-216-089-00	METAL GLAZE	47K 5% 1/10W	C1603A 1-162-578-51	CERAMIC	0.0047MF	20% 400V
R354	1-216-033-00	METAL GLAZE	220 5% 1/10W	C1604A 1-162-578-51	CERAMIC	0.0047MF	20% 400V
R355	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	C1605A 1-162-578-51	CERAMIC	0.0047MF	20% 400V
R356	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W				
R357	1-216-033-00	METAL GLAZE	220 5% 1/10W	C1606A 1-162-578-51	CERAMIC	0.0047MF	20% 400V
R358	1-216-033-00	METAL GLAZE	220 5% 1/10W	C1607A 1-161-964-61	CERAMIC	0.0047MF	250V
R359	1-216-089-00	METAL GLAZE	47K 5% 1/10W				<FUSE>
R360	1-216-089-00	METAL GLAZE	47K 5% 1/10W	F1601A 1-532-350-11	FUSE, TIME-LAG 4A/250V		
R361	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	1-533-087-00	HOLDER, FUSE: F1601		
R362	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				<TRANSFORMER>
R363	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W	LF1601A 1-421-866-12	LFT		
R364	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	LF1602A 1-421-776-11	LFT		
R365	1-216-047-00	METAL GLAZE	820 5% 1/10W	LF1603A 1-421-592-21	TRANSFORMER, FERRITE		
R366	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W				<RESISTOR>
R367	1-216-033-00	METAL GLAZE	220 5% 1/10W				
R370	1-216-033-00	METAL GLAZE	220 5% 1/10W	R1601A 1-246-513-75	CARBON	47K 5% 1/4W	
R372	1-216-023-00	METAL GLAZE	82 5% 1/10W	R1602A 1-244-945-91	CARBON	1M 5% 1/2W	
R376	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R1603A 1-217-328-11	WIREWOUND	2.7 10% 7W F	
R378	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R1604A 1-246-513-75	CARBON	47K 5% 1/4W	
R379	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R1605A 1-218-265-91	METAL GLAZE	8.2M 5% 1W	
R380	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W				<THERMISTOR>
R381	1-216-093-00	METAL GLAZE	68K 5% 1/10W	THP601A 1-808-059-31	THERMISTOR, POSITIVE		
R382	1-216-103-00	METAL GLAZE	180K 5% 1/10W				*****
R383	1-216-115-00	METAL GLAZE	560K 5% 1/10W				
R385	1-216-085-00	METAL GLAZE	33K 5% 1/10W				
R386	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W				
R387	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R388	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R389	1-216-101-00	METAL GLAZE	150K 5% 1/10W				
R391	1-216-023-00	METAL GLAZE	82 5% 1/10W				
R392	1-216-019-00	METAL GLAZE	56 5% 1/10W				
R393	1-216-019-00	METAL GLAZE	56 5% 1/10W				
R394	1-216-019-00	METAL GLAZE	56 5% 1/10W				
R398	1-216-081-00	METAL GLAZE	22K 5% 1/10W				
R401	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W				
R402	1-216-051-00	METAL GLAZE	1.2K 5% 1/10W				
R403	1-216-025-00	METAL GLAZE	100 5% 1/10W				
R404	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W				
R405	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R406	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W				

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**F2 A C**

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK		
*1-631-223-11	F2 BOARD *****			R111	1-249-423-11	CARBON	3.3K 5% 1/4W		
*1-566-664-11	PIN, CONNECTOR 4P			R116	1-249-407-11	CARBON	150 5% 1/4W		
	<SWITCH>			R118	1-249-435-11	CARBON	33K 5% 1/4W		
S1701A	I-571-433-11	SWITCH, PUSH (AC POWER)		R128	1-249-406-11	CARBON	120 5% 1/4W		
	*****			R129	1-249-421-11	CARBON	2.2K 5% 1/4W		
*A-1632-001-A	A BOARD, COMPLETE *****			R130	1-249-421-11	CARBON	2.2K 5% 1/4W		
*1-560-290-00	PLUG, CONNECTOR (2.5MM PITCH)			R157	1-249-417-11	CARBON	1K 5% 1/4W		
*1-564-881-11	PLUG, CONNECTOR 4P			R158	1-249-409-11	CARBON	220 5% 1/4W		
*1-564-886-11	PLUG, CONNECTOR 9P			R159	1-249-409-11	CARBON	220 5% 1/4W		
*1-565-503-11	CONNECTOR, BOARD TO BOARD 12P			R161	1-249-437-11	CARBON	47K 5% 1/4W		
*1-566-659-11	CONNECTOR, HINGE (SOCKET) 18P			R162	1-249-440-11	CARBON	82K 5% 1/4W		
	<CAPACITOR>			R163	1-249-440-11	CARBON	82K 5% 1/4W		
C101	1-126-233-11	ELECT	22MF	20%	50V	R164	1-249-430-11	CARBON	12K 5% 1/4W
C102	1-126-103-11	ELECT	470MF	20%	16V	R165	1-249-430-11	CARBON	12K 5% 1/4W
C104	1-124-910-11	ELECT	47MF	20%	50V	R167	1-249-422-11	CARBON	2.7K 5% 1/4W
C106	1-126-233-11	ELECT	22MF	20%	50V	R168	1-249-437-11	CARBON	47K 5% 1/4W
C108	1-136-165-00	FILM	0.1MF	5%	50V	R169	1-249-422-11	CARBON	2.7K 5% 1/4W
C109	1-102-824-00	CERAMIC	470PF	5%	50V	R181	1-249-417-11	CARBON	1K 5% 1/4W
C111	1-124-925-11	ELECT	2.2MF	20%	50V	R182	1-249-425-11	CARBON	4.7K 5% 1/4W
C115	1-124-925-11	ELECT	2.2MF	20%	50V	R193	1-249-429-11	CARBON	10K 5% 1/4W
C127	1-124-122-11	ELECT	100MF	20%	50V		<IF BLOCK>		
C128	1-124-910-11	ELECT	47MF	20%	50V	S1F102	1-464-964-11	IF BLOCK (IFG-5.5S)	
C129	1-124-910-11	ELECT	47MF	20%	50V	V1F101	1-466-154-12	IF BLOCK (IFG-380S)	
C138	1-136-165-00	FILM	0.1MF	5%	50V		<TUNER>		
C171	1-102-114-00	CERAMIC	470PF	10%	50V	TU101A	I-465-301-11	TUNER, ET (UV-816(PLL))	
C172	1-102-114-00	CERAMIC	470PF	10%	50V		*****		
C177	1-102-074-00	CERAMIC	0.001MF	10%	50V	*A-1638-002-A	C BOARD, COMPLETE *****		
C181	1-101-004-00	CERAMIC	0.01MF		50V				
	<IC>					*1-506-371-00	PIN, CONNECTOR 2P		
IC103	8-759-979-62	IC PCF8574				*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P		
	<COIL>					*1-568-878-61	PIN, CONNECTOR 3P		
L100	1-410-116-11	INDUCTOR	0.56MMH			*1-568-881-51	PIN, CONNECTOR 6P		
L101	1-408-225-00	INDUCTOR	3.3UH			*4-379-160-01	COVER (REAR LID), CV		
L102	1-408-413-00	INDUCTOR	22UH						
L107	1-408-397-00	INDUCTOR	1UH			*4-379-167-01	COVER (MAIN), CV		
	<TRANSISTOR>					*4-386-664-01	SPRING		
Q113	8-729-119-78	TRANSISTOR 2SC2785-HFE							
Q114	8-729-119-78	TRANSISTOR 2SC2785-HFE							
Q115	8-729-119-78	TRANSISTOR 2SC2785-HFE							
Q116	8-729-119-78	TRANSISTOR 2SC2785-HFE							
Q125	8-729-900-89	TRANSISTOR DTC144ES							
Q126	8-729-900-65	TRANSISTOR DTA144ES							
Q181	8-729-119-78	TRANSISTOR 2SC2785-HFE							
	<RESISTOR>								
R101	1-249-405-11	CARBON	100	5%	1/4W				
R105	1-249-432-11	CARBON	18K	5%	1/4W	C703	1-102-980-00	CERAMIC	270PF 5% 50V
R107	1-249-433-11	CARBON	22K	5%	1/4W	C704	1-102-116-00	CERAMIC	680PF 10% 50V
R108	1-249-432-11	CARBON	18K	5%	1/4W	C705	1-102-978-00	CERAMIC	220PF 5% 50V
R110	1-249-429-11	CARBON	10K	5%	1/4W	C706	1-102-116-00	CERAMIC	680PF 10% 50V
	<CAPACITOR>					C707	1-162-116-00	CERAMIC	680PF 10% 2KV
						C708	1-162-114-00	CERAMIC	0.0047MF 2KV
						C709	1-102-116-00	CERAMIC	680PF 10% 50V
						C710	1-123-947-00	ELECT	10MF 20% 250V
						C711	1-101-880-00	CERAMIC	47PF 5% 50V
						C712	1-102-980-00	CERAMIC	270PF 5% 50V
						C714	1-124-360-00	ELECT	1000MF 20% 16V
						C716	1-162-622-11	CERAMIC	330PF 10% 400V
						C717	1-102-114-00	CERAMIC	470PF 10% 50V
						C718	1-102-114-00	CERAMIC	470PF 10% 50V
						C719	1-102-114-00	CERAMIC	470PF 10% 50V

The components identified by shading and mark **A** are critical for safety.  
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**C** **D**

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK				
<DIODE>											
D701	8-719-110-14	DIODE RD9.1ES-B3		R733	1-249-415-11	CARBON	680 5% 1/4W				
D702	8-719-911-19	DIODE ISS119		R734	1-249-405-11	CARBON	100 5% 1/4W				
D703	8-719-911-19	DIODE ISS119		R735	1-215-493-00	METAL	1M 1% 1/6W				
D704	8-719-911-19	DIODE ISS119		R736	1-216-486-00	METAL OXIDE	8.2K 5% 3W F				
D705	8-719-911-19	DIODE ISS119		R737	1-215-491-00	METAL	820K 1% 1/6W				
D706	8-719-911-19	DIODE ISS119		R739	1-249-417-11	CARBON	1K 5% 1/4W				
D707	8-719-911-19	DIODE ISS119		<VARIABLE RESISTOR>							
D708	8-719-911-19	DIODE ISS119		RV701	1-230-641-11	RES, ADJ, METAL GLAZE	2.2M				
D709	8-719-911-19	DIODE ISS119		RV702	1-230-619-11	RES, ADJ, METAL GLAZE	1.0M				
D710	8-719-911-19	DIODE ISS119		RV703	1-237-749-11	RES, ADJ, CARBON	2200				
D711	8-719-300-33	DIODE RU-3AM		RV704	1-237-749-11	RES, ADJ, CARBON	2200				
D713	8-719-911-19	DIODE ISS119		*****							
<JACK>											
J701	1-526-798-51	SOCKET, PICTURE TUBE		*A-1642-002-A	D BOARD, COMPLETE						
<COIL>											
L704	1-410-878-21	INDUCTOR	33UH	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P						
<TRANSISTOR>											
Q702	8-729-119-78	TRANSISTOR 2SC2785-HFE		*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P						
Q703	8-729-326-11	TRANSISTOR 2SC2611		*1-560-290-00	PLUG, CONNECTOR (2.5MM PITCH)						
Q704	8-729-200-17	TRANSISTOR 2SA1091		*1-564-038-00	CONNECTOR PLUG, DY (MINI) 6P						
Q705	8-729-119-78	TRANSISTOR 2SC2785-HFE		*1-564-505-11	PLUG, CONNECTOR 2P						
Q706	8-729-326-11	TRANSISTOR 2SC2611		*1-565-394-11	PIN, BOARD TO BOARD CONNECTOR						
Q707	8-729-200-17	TRANSISTOR 2SA1091		*1-565-395-11	PIN, CONNECTOR 3P						
Q708	8-729-119-78	TRANSISTOR 2SC2785-HFE		*1-566-367-11	CONNECTOR, HINGE (RECEPTACLE)						
Q709	8-729-326-11	TRANSISTOR 2SC2611		*1-568-878-51	PIN, CONNECTOR 3P						
Q710	8-729-200-17	TRANSISTOR 2SA1091		*1-568-879-61	PIN, CONNECTOR 4P						
<RESISTOR>											
R704	1-216-486-00	METAL OXIDE	8.2K 5% 3W F	*1-568-881-51	PIN, CONNECTOR 6P						
R705	1-202-824-00	SOLID	3.3K 10% 1/2W	*1-568-881-61	PIN, CONNECTOR 6P						
R706	1-249-409-11	CARBON	220 5% 1/4W	*1-568-882-51	PIN, CONNECTOR 7P						
R707	1-249-412-11	CARBON	390 5% 1/4W	*1-568-882-71	PIN, CONNECTOR 7P						
R708	1-249-401-11	CARBON	47 5% 1/4W	4-200-001-01	HOLDER, IC						
R709	1-202-844-00	SOLID	330K 10% 1/2W	*4-341-751-01	EYELET						
R710	1-215-465-00	METAL	68K 1% 1/6W	*4-341-752-01	EYELET						
R712	1-249-417-11	CARBON	1K 5% 1/4W	*4-368-683-01	SPRING						
R713	1-215-471-00	METAL	120K 1% 1/6W	<CAPACITOR>							
R714	1-216-486-00	METAL OXIDE	8.2K 5% 3W F	C002	1-102-074-00	CERAMIC	0.001MF 10% 50V				
R715	1-202-824-00	SOLID	3.3K 10% 1/2W	C003	1-123-875-11	ELECT	10MF 20% 50V				
R716	1-249-409-11	CARBON	220 5% 1/4W	C004	1-124-120-11	ELECT	220MF 20% 16V				
R717	1-249-415-11	CARBON	680 5% 1/4W	C005	1-124-791-11	ELECT	1MF 20% 50V				
R718	1-202-814-11	SOLID	33K 10% 1/2W	C006	1-102-978-00	CERAMIC	220PF 5% 50V				
R719	1-249-401-11	CARBON	47 5% 1/4W	C007	1-102-978-00	CERAMIC	220PF 5% 50V				
R720	1-249-423-11	CARBON	3.3K 5% 1/4W	C008	1-101-880-00	CERAMIC	47PF 5% 50V				
R721	1-202-842-11	SOLID	220K 10% 1/2W	C009	1-101-880-00	CERAMIC	47PF 5% 50V				
R722	1-202-848-00	SOLID	680K 10% 1/2W	C010	1-124-120-11	ELECT	220MF 20% 16V				
R723	1-249-417-11	CARBON	1K 5% 1/4W	C011	1-101-004-00	CERAMIC	0.01MF 10% 50V				
R724	1-202-846-00	SOLID	470K 10% 1/2W	C012	1-123-875-11	ELECT	10MF 20% 50V				
R725	1-202-838-00	SOLID	100K 10% 1/2W	C013	1-106-220-00	MYLAR	0.1MF 10% 100V				
R726	1-202-824-00	SOLID	3.3K 10% 1/2W	C014	1-106-220-00	MYLAR	0.1MF 10% 100V				
R727	1-249-409-11	CARBON	220 5% 1/4W	C015	1-124-902-00	ELECT	0.47MF 20% 50V				
R728	1-216-347-11	METAL OXIDE	0.68 5% 1W F	C016	1-101-361-00	CERAMIC	150PF 5% 50V				
R729	1-249-416-11	CARBON	820 5% 1/4W	C017	1-106-220-00	MYLAR	0.1MF 10% 100V				
R730	1-249-401-11	CARBON	47 5% 1/4W	C018	1-102-980-00	CERAMIC	270PF 5% 50V				
R731	1-249-423-11	CARBON	3.3K 5% 1/4W	C019	1-106-383-00	MYLAR	0.047MF 10% 100V				
R732	1-249-415-11	CARBON	680 5% 1/4W	C020	1-124-917-11	ELECT	33MF 20% 50V				
				C021	1-102-973-00	CERAMIC	100PF 5% 50V				
				C022	1-101-004-00	CERAMIC	0.01MF 5% 50V				
				C023	1-102-973-00	CERAMIC	100PF 5% 50V				
				C024	1-102-973-00	CERAMIC	100PF 5% 50V				
				C025	1-102-973-00	CERAMIC	100PF 5% 50V				
				C027	1-124-910-11	ELECT	47MF 20% 50V				

D

The components identified by shading and mark  $\Delta$  are critical for safety.  
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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK						
C251	1-124-499-11	ELECT	1MF	20%	50V	C620	1-136-173-00	FILM	0.47MF	5%	50V		
C252	1-126-233-11	ELECT	22MF	20%	50V	C621	1-124-347-00	ELECT	100MF	20%	160V		
C253	1-102-074-00	CERAMIC	0.001MF	10%	50V	C622	1-124-556-11	ELECT	2200MF	20%	16V		
C254	1-106-220-00	MYLAR	0.1MF	10%	100V	C623	1-124-910-11	ELECT	47MF	20%	50V		
C255	1-124-636-00	ELECT	3300MF	20%	25V	C624	1-124-122-11	ELECT	100MF	20%	50V		
C261	1-124-791-11	ELECT	1MF	20%	50V	C625	1-124-360-00	ELECT	1000MF	20%	16V		
C262	1-126-233-11	ELECT	22MF	20%	50V	C626	1-123-875-11	ELECT	10MF	20%	50V		
C263	1-102-074-00	CERAMIC	0.001MF	10%	50V	C627	1-108-614-11	MYLAR	0.001MF	10%	100V		
C264	1-106-220-00	MYLAR	0.1MF	10%	100V	C628	1-162-116-00	CERAMIC	680PF	10%	2KV		
C265	1-124-564-11	ELECT	4700MF	20%	25V	C631	1-124-927-11	ELECT	4.7MF	20%	50V		
C501	1-124-927-11	ELECT	4.7MF	20%	50V	C632	1-102-973-00	CERAMIC	100PF	5%	50V		
C502	1-124-927-11	ELECT	4.7MF	20%	50V	C633	1-102-973-00	CERAMIC	100PF	5%	50V		
C503	1-106-371-00	MYLAR	0.015MF	10%	400V	C801	1-126-105-11	ELECT	1000MF	20%	35V		
C504	1-101-361-00	CERAMIC	150PF	5%	50V	C802	1-102-030-00	CERAMIC	330PF	10%	500V		
C505	1-108-794-11	MYLAR	0.0015MF	5%	50V	C804	1-123-948-00	ELECT	22MF	20%	250V		
C506	1-106-375-12	MYLAR	0.022MF	10%	250V	C805	1-162-114-00	CERAMIC	0.0047MF		2KV		
C507	1-130-783-00	MYLAR	0.33MF	10%	100V	C806	1-106-220-00	MYLAR	0.1MF	10%	100V		
C508	1-106-375-12	MYLAR	0.022MF	10%	250V	C807	1-106-395-00	MYLAR	0.15MF	10%	200V		
C509	1-106-220-00	MYLAR	0.1MF	10%	100V	C810	1-123-024-21	ELECT	33MF		160V		
C510	1-161-959-00	CERAMIC	22PF	10%	500V	C811	1-136-113-00	FILM	2MF	5%	200V		
C511	1-108-620-11	MYLAR	0.0033MF	10%	100V	C812	1-124-634-11	ELECT	1MF	20%	250V		
C512	1-106-220-00	MYLAR	0.1MF	10%	100V	C813	1-102-212-00	CERAMIC	820PF	10%	500V		
C513	1-102-978-00	CERAMIC	220PF	5%	50V	C814	$\Delta$ 1-161-731-11	CERAMIC	0.001MF	10%	2KV		
C514	1-106-228-00	MYLAR	0.22MF	10%	100V	C815	1-136-111-00	FILM	1MF	5%	200V		
C515	1-124-791-11	ELECT	1MF	20%	50V	C817	1-136-565-11	FILM	0.015MF	3%	1.4KV		
C516	1-108-614-11	MYLAR	0.001MF	10%	100V	C818	1-136-759-11	FILM	0.039MF	10%	630V		
C517	1-124-252-00	ELECT	0.33MF	20%	50V	C819	$\Delta$ 1-161-731-11	CERAMIC	0.001MF	10%	2KV		
C518	1-124-902-00	ELECT	0.47MF	20%	50V	C820	1-106-218-00	MYLAR	0.0082MF	10%	400V		
C519	1-136-173-00	FILM	0.47MF	5%	50V	C821	$\Delta$ 1-162-116-51	CERAMIC	680PF	10%	2KV		
C520	1-102-121-00	CERAMIC	0.0022MF	10%	50V	C822	1-102-114-00	CERAMIC	470PF	10%	50V		
C521	1-106-220-00	MYLAR	0.1MF	10%	100V	C823	1-106-359-00	MYLAR	0.0047MF	10%	400V		
C522	1-124-122-11	ELECT	100MF	20%	50V	C824	1-102-212-00	CERAMIC	820PF	10%	500V		
C523	1-108-614-11	MYLAR	0.001MF	10%	100V	C825	1-106-375-12	MYLAR	0.022MF	10%	250V		
C525	1-102-973-00	CERAMIC	100PF	5%	50V	<FILTER>							
C526	1-102-951-00	CERAMIC	15PF	5%	50V	CF001	1-577-364-11	VIBRATOR, CERAMIC					
C527	1-106-220-00	MYLAR	0.1MF	10%	100V	CF501	1-567-888-11	OSCILLATOR, CERAMIC					
C531	1-124-190-00	ELECT	680MF	10%	25V	<DIODE>							
C532	1-124-122-11	ELECT	100MF	20%	50V	D001	8-719-911-19	DIODE ISS119					
C533	1-106-216-00	MYLAR	0.068MF	10%	100V	D002	8-719-109-98	DIODE RD6.8ES-B3					
C534	1-124-120-11	ELECT	220MF	20%	16V	D003	8-719-911-19	DIODE ISS119					
C536	1-131-365-00	TANTALUM	10MF	10%	16V	D004	8-719-911-19	DIODE ISS119					
C537	1-124-791-11	ELECT	1MF	20%	50V	D005	8-719-109-89	DIODE RD5.6ES-B2					
C538	1-108-614-11	MYLAR	0.001MF	10%	100V	D006	8-719-110-76	DIODE RD33ES-B1					
C539	1-102-820-00	CERAMIC	330PF	5%	50V	D007	8-719-911-19	DIODE ISS119					
C592	1-124-122-11	ELECT	100MF	20%	50V	D009	8-719-109-89	DIODE RD5.6ES-B2					
C593	1-102-820-00	CERAMIC	330PF	5%	50V	D010	8-719-109-93	DIODE RD6.2ES-B2					
C601	1-162-599-12	CERAMIC	0.0047MF		250V	D011	8-719-109-93	DIODE RD6.2ES-B2					
C602	1-162-599-12	CERAMIC	0.0047MF		250V	D027	8-719-110-36	DIODE RD13ES-B2					
C603	1-162-599-12	CERAMIC	0.0047MF		250V	D028	8-719-911-19	DIODE ISS119					
C604	1-125-318-00	ELECT (BLOCK)	220MF	20%	400V	D501	8-719-911-19	DIODE ISS119					
C605	1-124-510-11	ELECT	220MF	20%	35V	D504	8-719-911-55	DIODE U05G					
C606	1-102-114-00	CERAMIC	470PF	10%	50V	D506	8-719-016-42	DIODE MC932					
C607	1-130-834-00	MYLAR	1MF	10%	63V	D508	8-719-911-19	DIODE ISS119					
C608	1-124-927-11	ELECT	4.7MF	20%	50V	D509	8-719-911-19	DIODE ISS119					
C611	1-124-910-11	ELECT	47MF	20%	50V	D511	8-719-911-55	DIODE U05G					
C612	1-108-614-11	MYLAR	0.001MF	10%	100V	D512	8-719-911-55	DIODE U05G					
C613	1-136-539-11	FILM	0.0022MF	3%	2KV	D513	8-719-109-81	DIODE RD4.7ES-B2					
C614	1-102-030-00	CERAMIC	330PF	10%	500V	D601	8-719-946-90	DIODE KBU4JL-6088					
C615	1-124-557-11	ELECT	1000MF	20%	25V	D602	8-719-300-33	DIODE RU-3AM					

The components identified by shading and mark **A** are critical for safety.  
Replace only with part number specified.

**D**

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
D603	8-719-911-55	DIODE U05G		L810	A 1-421-982-12	PMC	
D604	8-719-911-55	DIODE U05G				<IC LINK>	
D605	8-719-911-55	DIODE U05G		PS601	A 1-532-984-91	LINK, IC (ICP-N50) 2A	
D606	8-719-300-33	DIODE RU-3AM		PS602	A 1-532-984-91	LINK, IC (ICP-N50) 2A	
D607	8-719-300-33	DIODE RU-3AM				<TRANSISTOR>	
D608	8-719-300-33	DIODE RU-3AM		Q001	8-729-900-89	TRANSISTOR DTC144ES	
D609	8-719-110-76	DIODE RD33ES-B1		Q002	8-729-900-65	TRANSISTOR DTA144ES	
D610	8-719-300-59	DIODE CTU-12S		Q003	8-729-173-38	TRANSISTOR 2SA733-K	
D611	8-719-900-26	DIODE ERD29-08J		Q004	8-729-173-38	TRANSISTOR 2SA733-K	
D612	8-719-300-59	DIODE CTU-12S		Q005	8-729-900-89	TRANSISTOR DTC144ES	
D613	8-719-300-33	DIODE RU-3AM		Q006	8-729-900-89	TRANSISTOR DTC144ES	
D614	8-719-300-33	DIODE RU-3AM		Q007	8-729-900-89	TRANSISTOR DTC144ES	
D616	8-719-109-93	DIODE RD6.2ES-B2		Q008	8-729-900-89	TRANSISTOR DTC144ES	
D617	8-719-911-19	DIODE ISS119		Q009	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D618	8-719-109-89	DIODE RD5.6ES-B2		Q251	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D619	8-719-110-76	DIODE RD33ES-B1		Q261	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D620	8-719-016-42	DIODE MC932		Q271	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D621	8-719-110-76	DIODE RD33ES-B1		Q502	8-729-173-38	TRANSISTOR 2SA733-K	
D622	8-719-911-19	DIODE ISS119		Q505	8-729-140-96	TRANSISTOR 2SD774-34	
D623	8-719-911-19	DIODE ISS119		Q506	8-729-140-97	TRANSISTOR 2SB734-34	
D624	8-719-911-19	DIODE ISS119		Q507	8-729-173-38	TRANSISTOR 2SA733-K	
D630	8-719-110-39	DIODE RD15ES-B1		Q598	8-729-173-38	TRANSISTOR 2SA733-K	
D801	8-719-300-33	DIODE RU-3AM		Q601	8-729-111-67	TRANSISTOR 2SB1094-L	
D802	8-719-300-33	DIODE RU-3AM		Q602	8-729-209-02	TRANSISTOR 2SD1548-LB	
D803	8-719-300-65	DIODE ES1F		Q603	8-729-111-67	TRANSISTOR 2SB1094-L	
D804	8-719-911-55	DIODE U05G		Q604	8-729-173-38	TRANSISTOR 2SA733-K	
D805	8-719-911-55	DIODE U05G		Q605	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D806	8-719-945-80	DIODE ERC06-15S		Q606	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D807	8-719-945-80	DIODE ERC06-15S		Q607	8-729-920-92	TRANSISTOR 2SD2096 EF	
D808	8-719-900-26	DIODE ERD29-08J		Q608	8-729-119-78	TRANSISTOR 2SC2785-HFE	
<IC>							
IC001	8-759-035-37	IC SDA2083-A006		Q609	8-729-320-62	TRANSISTOR 2SD789-34	
IC002	8-752-332-82	IC CXD1050A-09P		Q801	8-729-119-78	TRANSISTOR 2SC2785-HFE	
IC003	8-759-945-58	IC RC4558P		Q804	8-729-304-50	TRANSISTOR 2SD1941-06	
IC005	8-759-748-56	IC SDA2546		Q805	8-729-119-80	TRANSISTOR 2SC2688-LK	
IC251	8-759-988-94	IC TDA2050				<RESISTOR>	
<SPACER, INSULATING>							
IC261	8-759-988-94	IC TDA2050		R001	1-249-413-11	CARBON	470 5% 1/4W
<SPACER, INSULATING>							
IC261	8-759-988-94	IC TDA2050		R002	1-249-413-11	CARBON	470 5% 1/4W
<SPACER, INSULATING>							
IC501	8-759-970-73	IC TEA2028B		R003	1-249-417-11	CARBON	1K 5% 1/4W
IC502	8-759-944-57	IC TDA8170		R004	1-249-417-11	CARBON	1K 5% 1/4W
IC601	8-759-988-95	IC TEA2260		R005	1-249-417-11	CARBON	1K 5% 1/4W
IC604	8-759-144-84	IC UPC24M05HF				<COIL>	
IC608	8-759-982-13	IC RC7812FA		R006	1-249-429-11	CARBON	10K 5% 1/4W
<COIL>							
L001	1-408-414-00	INDUCTOR 27UH		R007	1-249-425-11	CARBON	4.7K 5% 1/4W
L501	1-408-225-00	INDUCTOR 3.3UH		R008	1-249-429-11	CARBON	10K 5% 1/4W
L601	*1-420-872-00	COIL, AIR CORE		R009	1-249-429-11	CARBON	10K 5% 1/4W
L602	1-410-396-41	FERRITE BEAD INDUCTOR		R010	1-249-413-11	CARBON	470 5% 1/4W
L603	1-410-396-41	FERRITE BEAD INDUCTOR				<COIL>	
L604	1-410-671-31	INDUCTOR 47UH		R011	1-249-425-11	CARBON	4.7K 5% 1/4W
L605	1-459-585-11	COIL (WITH CORE) (DRUM TYPE)		R012	1-249-417-11	CARBON	1K 5% 1/4W
L606	1-421-013-00	COIL (HORIZONTAL CHOKER) 25UH		R013	1-249-429-11	CARBON	10K 5% 1/4W
L607	1-410-671-31	INDUCTOR 47UH		R014	1-249-428-11	CARBON	8.2K 5% 1/4W
L608	1-410-671-31	INDUCTOR 47UH		R015	1-249-423-11	CARBON	3.3K 5% 1/4W
L803	1-459-104-00	COIL, DUST CORE				<COIL>	
L804	1-408-239-00	INDUCTOR 4.7MMH		R016	1-249-435-11	CARBON	33K 5% 1/4W
L805	A 1-459-755-12	COIL, HORIZONTAL LINEARITY		R017	1-249-436-11	CARBON	39K 5% 1/4W
L806	1-459-111-00	COIL, DRAM CORE (CDI)		R018	1-249-440-11	CARBON	82K 5% 1/4W
L809	*1-420-872-00	COIL, AIR CORE		R019	1-249-417-11	CARBON	1K 5% 1/4W
				R020	1-249-417-11	CARBON	1K 5% 1/4W
				R021	1-249-425-11	CARBON	4.7K 5% 1/4W
				R022	1-249-425-11	CARBON	4.7K 5% 1/4W
				R023	1-249-410-11	CARBON	270 5% 1/4W

D

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R024	1-249-417-11	CARBON	1K 5% 1/4W	R264	1-216-357-00	METAL OXIDE	4.7 5% 1W F
R025	1-249-405-11	CARBON	100 5% 1/4W	R265	1-249-429-11	CARBON	10K 5% 1/4W
R026	1-249-417-11	CARBON	1K 5% 1/4W	R266	1-247-897-11	CARBON	560K 5% 1/4W
R027	1-249-405-11	CARBON	100 5% 1/4W	R267	1-249-431-11	CARBON	15K 5% 1/4W
R028	1-249-405-11	CARBON	100 5% 1/4W	R268	1-215-869-11	METAL OXIDE	1K 5% 1W F
R029	1-249-429-11	CARBON	10K 5% 1/4W	R269	1-249-425-11	CARBON	4.7K 5% 1/4W
R030	1-249-429-11	CARBON	10K 5% 1/4W	R271	1-249-415-11	CARBON	680 5% 1/4W
R031	1-249-433-11	CARBON	22K 5% 1/4W	R272	1-249-429-11	CARBON	10K 5% 1/4W
R032	1-249-429-11	CARBON	10K 5% 1/4W	R273	1-249-429-11	CARBON	10K 5% 1/4W
R033	1-249-429-11	CARBON	10K 5% 1/4W	R500	1-247-897-11	CARBON	560K 5% 1/4W
R034	1-249-431-11	CARBON	15K 5% 1/4W	R501	1-249-413-11	CARBON	470 5% 1/4W
R035	1-249-433-11	CARBON	22K 5% 1/4W	R502	1-249-409-11	CARBON	220 5% 1/4W
R036	1-249-432-11	CARBON	18K 5% 1/4W	R503	1-249-410-11	CARBON	270 5% 1/4W
R037	1-249-425-11	CARBON	4.7K 5% 1/4W	R504	1-215-427-00	METAL	1.8K 1% 1/6W
R038	1-249-422-11	CARBON	2.7K 5% 1/4W	R505	1-249-431-11	CARBON	15K 5% 1/4W
R039	1-249-433-11	CARBON	22K 5% 1/4W	R506	1-249-428-11	CARBON	8.2K 5% 1/4W
R040	1-249-431-11	CARBON	15K 5% 1/4W	R509	1-249-424-11	CARBON	3.9K 5% 1/4W
R041	1-249-429-11	CARBON	10K 5% 1/4W	R510	1-249-426-11	CARBON	5.6K 5% 1/4W
R042	1-249-417-11	CARBON	1K 5% 1/4W	R514	1-249-409-11	CARBON	220 5% 1/4W
R043	1-249-413-11	CARBON	470 5% 1/4W	R515	1-249-423-11	CARBON	3.3K 5% 1/4W
R044	1-249-441-11	CARBON	100K 5% 1/4W	R517	1-249-429-11	CARBON	10K 5% 1/4W
R045	1-249-423-11	CARBON	3.3K 5% 1/4W	R518	1-249-437-11	CARBON	47K 5% 1/4W
R046	1-249-435-11	CARBON	33K 5% 1/4W	R519	1-249-433-11	CARBON	22K 5% 1/4W
R047	1-249-429-11	CARBON	10K 5% 1/4W	R520	1-249-411-11	CARBON	330 5% 1/4W
R048	1-249-429-11	CARBON	10K 5% 1/4W	R521	1-249-405-11	CARBON	100 5% 1/4W
R049	1-249-429-11	CARBON	10K 5% 1/4W	R522	1-215-469-00	METAL	100K 1% 1/6W
R050	1-249-426-11	CARBON	5.6K 5% 1/4W	R523	1-249-417-11	CARBON	1K 5% 1/4W
R051	1-249-413-11	CARBON	470 5% 1/4W	R524	1-249-421-11	CARBON	2.2K 5% 1/4W
R052	1-249-417-11	CARBON	1K 5% 1/4W	R525	1-249-417-11	CARBON	1K 5% 1/4W
R053	1-249-417-11	CARBON	1K 5% 1/4W	R526	1-249-409-11	CARBON	220 5% 1/4W F
R054	1-249-417-11	CARBON	1K 5% 1/4W	R527	1-249-431-11	CARBON	15K 5% 1/4W
R055	1-249-411-11	CARBON	330 5% 1/4W	R528	1-249-408-11	CARBON	180 5% 1/4W
R056	1-249-405-11	CARBON	100 5% 1/4W	R529	1-249-427-11	CARBON	6.8K 5% 1/4W
R057	1-249-409-11	CARBON	220 5% 1/4W	R530	1-249-448-11	CARBON	1.2 5% 1/4W F
R058	1-249-424-11	CARBON	3.9K 5% 1/4W	R531	1-247-881-00	CARBON	120K 5% 1/4W
R059	1-249-417-11	CARBON	1K 5% 1/4W	R532	1-249-417-11	CARBON	1K 5% 1/4W
R060	1-249-417-11	CARBON	1K 5% 1/4W	R534	1-247-901-11	CARBON	820K 5% 1/4W
R061	1-249-417-11	CARBON	1K 5% 1/4W	R535	1-249-749-00	CARBON	2.2M 5% 1/4W
R062	1-249-417-11	CARBON	1K 5% 1/4W	R536	1-249-749-00	CARBON	2.2M 5% 1/4W
R063	1-249-417-11	CARBON	1K 5% 1/4W	R537	1-249-434-11	CARBON	27K 5% 1/4W
R064	1-249-417-11	CARBON	1K 5% 1/4W	R538	1-247-883-00	CARBON	150K 5% 1/4W
R065	1-249-417-11	CARBON	1K 5% 1/4W	R539	1-247-883-00	CARBON	150K 5% 1/4W
R066	1-249-417-11	CARBON	1K 5% 1/4W	R540	1-249-399-11	CARBON	33 5% 1/4W
R067	1-249-417-11	CARBON	1K 5% 1/4W	R541	1-249-438-11	CARBON	56K 5% 1/4W
R068	1-249-417-11	CARBON	1K 5% 1/4W	R542	1-249-389-11	CARBON	4.7 5% 1/4W
R069	1-249-417-11	CARBON	1K 5% 1/4W	R543	1-249-451-11	CARBON	2.2 5% 1/4W
R070	1-249-417-11	CARBON	1K 5% 1/4W	R544	1-247-745-11	CARBON	330+ 5% 1/2W
R071	1-249-417-11	CARBON	1K 5% 1/4W	R545	1-249-433-11	CARBON	22K 5% 1/4W
R072	1-249-417-11	CARBON	1K 5% 1/4W	R546	1-249-434-11	CARBON	27K 5% 1/4W
R073	1-249-417-11	CARBON	1K 5% 1/4W	R547	1-249-423-11	CARBON	3.3K 5% 1/4W
R074	1-249-425-11	CARBON	4.7K 5% 1/4W	R548	1-216-349-00	METAL OXIDE	1 5% 1W F
R075	1-249-409-11	CARBON	220 5% 1/4W	R549	1-216-454-11	METAL OXIDE	390 5% 2W F
R251	1-249-425-11	CARBON	4.7K 5% 1/4W	R550	1-249-440-11	CARBON	82K 5% 1/4W
R252	1-249-412-11	CARBON	390 5% 1/4W	R551	1-249-749-00	CARBON	2.2M 5% 1/4W
R253	1-249-429-11	CARBON	10K 5% 1/4W	R553	1-216-869-11	METAL OXIDE	1K 5% 1W
R254	1-216-357-00	METAL OXIDE	4.7 5% 1W F	R554	1-249-411-11	CARBON	330 5% 1/4W
R255	1-249-429-11	CARBON	10K 5% 1/4W	R555	1-249-749-00	CARBON	2.2M 5% 1/4W
R256	1-247-897-11	CARBON	560K 5% 1/4W	R556	1-249-405-11	CARBON	100 5% 1/4W
R257	1-249-431-11	CARBON	15K 5% 1/4W	R557	1-249-425-11	CARBON	4.7K 5% 1/4W
R258	1-215-869-11	METAL OXIDE	1K 5% 1W F	R558	1-247-895-00	CARBON	470K 5% 1/4W
R259	1-249-425-11	CARBON	4.7K 5% 1/4W	R559	1-249-427-11	CARBON	6.8K 5% 1/4W
R261	1-249-425-11	CARBON	4.7K 5% 1/4W	R560	1-249-411-11	CARBON	330 5% 1/4W
R262	1-249-412-11	CARBON	390 5% 1/4W	R591	1-249-416-11	CARBON	820 5% 1/4W
R263	1-249-429-11	CARBON	10K 5% 1/4W				

The components identified by shading and mark  are critical for safety.  
Replace only with part number specified.

**D H1 H2**

REF. NO.	PART NO.	DESCRIPTION			REMARK	REF. NO.	PART NO.	DESCRIPTION		REMARK		
R592	1-249-417-11	CARBON	1K	5%	1/4W	R595	1-249-393-11	CARBON	10	5%	1/4W	
R593	1-249-419-11	CARBON	1.5K	5%	1/4W							
R594	1-249-428-11	CARBON	8.2K	5%	1/4W							
R597	1-249-413-11	CARBON	470	5%	1/4W							
R598	1-215-900-11	METAL OXIDE	22K	5%	2W	F						
R599	1-247-887-00	CARBON	220K	5%	1/4W	RV501	1-238-013-11	RES, ADJ., CARBON	2.2K			
R600	1-249-381-11	CARBON	1	5%	1/4W	RV502	1-238-016-11	RES, ADJ., CARBON	10K			
R603	1-216-400-11	METAL OXIDE	8.2	5%	3W	RV601	1-238-011-11	RES, ADJ., CARBON	470			
R604	1-249-405-11	CARBON	100	5%	1/4W							
R605	1-249-433-11	CARBON	22K	5%	1/4W							
R606	1-249-418-11	CARBON	1.2K	5%	1/4W	SG801	1-519-422-11	GAP, SPARK				
R607	1-249-425-11	CARBON	4.7K	5%	1/4W							
R608	1-216-488-11	METAL OXIDE	18K	5%	3W							
R609	1-249-396-11	CARBON	18	5%	1/4W							
R610	1-244-941-00	CARBON	680K	5%	1/2W							
R611	1-249-400-11	CARBON	39	5%	1/4W	T601	A. 1-449-822-11	TRANSFORMER				
R612	1-249-417-11	CARBON	1K	5%	1/4W	T602	A. 1-424-277-11	TRANSFORMER, TRIGGER PULSE				
R613	1-249-441-11	CARBON	100K	5%	1/4W	T801	A. 1-437-090-21	HDT				
R614	1-205-758-11	WIREWOUND	100	10%	10W	T802	A. 1-439-416-11	TRANSFORMER ASSY, FLYBACK (UX-1600)				
R616	1-247-881-00	CARBON	120K	5%	1/4W							
R617	1-249-411-11	CARBON	330	5%	1/4W							
R618	1-216-431-11	METAL OXIDE	560	5%	1W	F						
R619	1-249-429-11	CARBON	10K	5%	1/4W							
R620	1-249-433-11	CARBON	22K	5%	1/4W							
R621	1-249-431-11	CARBON	15K	5%	1/4W							
R622	1-249-429-11	CARBON	10K	5%	1/4W							
R623	1-249-433-11	CARBON	22K	5%	1/4W							
R624	1-249-426-11	CARBON	5.6K	5%	1/4W							
R625	1-215-865-11	METAL OXIDE	220	5%	1W	F						
R626	1-249-411-11	CARBON	330	5%	1/4W							
R628	1-249-393-11	CARBON	10	5%	1/4W							
R629	1-249-411-11	CARBON	330	5%	1/4W							
R633	1-249-417-11	CARBON	1K	5%	1/4W							
R634	1-216-430-11	METAL OXIDE	390	5%	1W	F	R1651	1-249-413-11	CARBON	470	5%	1/4W
R635	1-249-429-11	CARBON	10K	5%	1/4W	R1652	1-249-413-11	CARBON	470	5%	1/4W	
R636	1-249-429-11	CARBON	10K	5%	1/4W							
R643	1-217-189-21	WIREWOUND	0.12	5%	2W	F						
R647	1-216-485-11	METAL OXIDE	5.6K	5%	3W	F	S1651	1-571-532-21	SWITCH, TACTIL			
R648	1-216-485-11	METAL OXIDE	5.6K	5%	3W	F	S1652	1-571-532-21	SWITCH, TACTIL			
R651	1-249-405-11	CARBON	100	5%	1/4W	S1653	1-571-532-21	SWITCH, TACTIL				
R653	1-205-758-11	WIREWOUND	100	10%	10W	F						
R802	1-249-443-11	CARBON	0.47	5%	1/4W							
R805	1-249-448-11	CARBON	1.2	5%	1/4W							
R806	1-249-439-11	CARBON	68K	5%	1/4W							
R807	1-216-869-11	METAL OXIDE	1K	5%	1W							
R809	1-202-821-11	SOLID	1.8K	10%	1/2W							
R810	1-202-818-00	SOLID	1K	10%	1/2W							
R811	1-215-882-00	METAL OXIDE	22	5%	2W	F						
R812	1-249-494-11	CARBON	68K	5%	1/2W							
R815	1-215-884-11	METAL OXIDE	47	5%	2W	F						
R816	1-215-868-00	METAL OXIDE	680	5%	1W	F						
R817	1-249-417-11	CARBON	1K	5%	1/4W		D1651	8-719-311-89	DIODE SEL1222R-C			
R820	1-249-403-11	CARBON	68	5%	1/4W							
R821	1-247-725-11	CARBON	10K	5%	1/4W							
R822	A. I 217-778-61	FUSIBLE	1K	5%	1W	F						
R825	1-216-345-11	METAL OXIDE	0.47	5%	1W	F						
R826	1-249-441-11	CARBON	100K	5%	1/4W							
R827	1-249-429-11	CARBON	10K	5%	1/4W							
R828	1-249-423-11	CARBON	3.3K	5%	1/4W							
R829	1-249-416-11	CARBON	820	5%	1/4W							
R831	1-249-451-11	CARBON	2.2	5%	1/4W							
R5501	1-249-429-11	CARBON	10K	5%	1/4W							
R5503	1-249-389-11	CARBON	4.7	5%	1/4W							
R5504	1-247-903-00	CARBON	1M	5%	1/4W							
R831	1-249-451-11	CARBON	2.2	5%	1/4W							
R5501	1-249-429-11	CARBON	10K	5%	1/4W							
R5503	1-249-389-11	CARBON	4.7	5%	1/4W							
R5504	1-247-903-00	CARBON	1M	5%	1/4W							

H2	Y	J2	J1
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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK						
<b>&lt;RESISTOR&gt;</b>													
R1661	1-249-413-11	CARBON	470 5% 1/4W	R1714	1-249-417-11	CARBON	1K 5% 1/4W						
R1662	1-249-413-11	CARBON	470 5% 1/4W	R1717	1-249-417-11	CARBON	1K 5% 1/4W						
<b>*****</b>													
*1-631-217-11	Y BOARD	*****		R1718	1-249-417-11	CARBON	1K 5% 1/4W						
*1-568 881-61	PIN, CONNECTOR 6P			R1723	1-249-415-11	CARBON	680 5% 1/4W						
*1-568-882-71	PIN, CONNECTOR 7P			<b>*****</b>									
<b>&lt;CAPACITOR&gt;</b>													
C1701	1-126-233-11	ELECT	22MF	20%	50V	<b>&lt;CAPACITOR&gt;</b>							
C1702	1-101-004-00	CERAMIC	0.01MF		50V	C1751	1-101-005-00	CERAMIC	0.022MF		50V		
C1703	1-126-233-11	ELECT	22MF	20%	50V	C1752	1-101-005-00	CERAMIC	0.022MF		50V		
C1704	1-101-004-00	CERAMIC	0.01MF		50V	C1755	1-102-114-00	CERAMIC	470PF	10%	50V		
C1705	1-126-233-11	ELECT	22MF	20%	50V	C1756	1-102-114-00	CERAMIC	470PF	10%	50V		
C1706	1-126-233-11	ELECT	22MF	20%	50V	<b>&lt;COIL&gt;</b>							
C1707	1-126-233-11	ELECT	22MF	20%	50V	L1751	1-412-240-11	INDUCTOR, WIDE BAND					
C1710	1-102-059-00	CERAMIC	22PF	5%	50V	L1752	1-412-240-11	INDUCTOR, WIDE BAND					
C1711	1-101-888-00	CERAMIC	68PF	5%	50V	<b>*****</b>							
<b>&lt;DIODE&gt;</b>													
D1701	8-719-911-19	DIODE 1SS119											
<b>&lt;NR PACK&gt;</b>													
DNR170	1-466-181-11	NR PACK (NRP-2E)											
<b>&lt;IC&gt;</b>													
IC1701	8-759-982-10	IC RC7809FA											
IC1702	8-759-604-29	IC M5F7805											
<b>&lt;COIL&gt;</b>													
L1701	1-410-671-31	INDUCTOR	47UH	C203	1-124-925-11	ELECT	2.2MF	20%	50V				
L1702	1-408-405-00	INDUCTOR	4.7UH	C205	1-124-927-11	ELECT	4.7MF	20%	50V				
L1703	1-410-671-31	INDUCTOR	47UH	C206	1-124-925-11	ELECT	2.2MF	20%	50V				
<b>&lt;TRANSISTOR&gt;</b>													
Q1701	8-729-900-89	TRANSISTOR DTC144ES		C207	1-124-927-11	ELECT	4.7MF	20%	50V				
Q1702	8-729-900-89	TRANSISTOR DTC144ES		C213	1-126-233-11	ELECT	22MF	20%	50V				
Q1703	8-729-900-80	TRANSISTOR DTC114ES		C214	1-106-363-00	MYLAR	0.0068MF	10%	400V				
Q1704	8-729-119-78	TRANSISTOR 2SC2785-HFE		C217	1-106-363-00	MYLAR	0.0068MF	10%	400V				
Q1705	8-729-173-38	TRANSISTOR 2SA733-K		C218	1-106-375-12	MYLAR	0.022MF	10%	250V				
<b>&lt;RESISTOR&gt;</b>													
R1701	1-215-860-11	METAL OXIDE	33 5%	1W	C219	1-106-375-12	MYLAR	0.022MF	10%	250V			
R1702	1-249-425-11	CARBON	4.7K 5%	1/4W	C220	1-106-620-11	MYLAR	0.0033MF	10%	100V			
R1703	1-249-434-11	CARBON	27K 5%	1/4W	C221	1-108-620-11	MYLAR	0.0033MF	10%	100V			
R1704	1-249-425-11	CARBON	4.7K 5%	1/4W	C222	1-106-385-00	MYLAR	0.056MF	10%	100V			
R1705	1-249-426-11	CARBON	5.6K 5%	1/4W	C223	1-106-385-00	MYLAR	0.056MF	10%	100V			
R1706	1-249-427-11	CARBON	6.8K 5%	1/4W	C224	1-106-367-00	MYLAR	0.01MF	10%	400V			
R1707	1-249-429-11	CARBON	10K 5%	1/4W	C225	1-136-173-00	FILM	0.47MF	5%	50V			
R1708	1-249-429-11	CARBON	10K 5%	1/4W	C226	1-136-173-00	FILM	0.47MF	5%	50V			
R1710	1-249-433-11	CARBON	22K 5%	1/4W	C227	1-106-375-12	MYLAR	0.022MF	10%	250V			
R1711	1-249-438-11	CARBON	56K 5%	1/4W	C228	1-106-379-12	MYLAR	0.033MF	10%	250V			
R1712	1-249-413-11	CARBON	470 5%	1/4W	C229	1-106-371-00	MYLAR	0.015MF	10%	400V			
R1713	1-249-414-11	CARBON	560 5%	1/4W	C230	1-106-371-00	MYLAR	0.015MF	10%	400V			
<b>&lt;CAPACITOR&gt;</b>													
*A-1651-003-A		J1 BOARD, COMPLETE	*****	C231	1-124-902-00	ELECT	0.47MF	20%	50V				
*1-561-534-41		SOCKET 21P		C232	1-123-875-11	ELECT	10MF	20%	50V				
*1-564-518-11		PLUG, CONNECTOR 3P		C233	1-163-005-11	CERAMIC CHIP	470PF	10%	50V				
*1-564-524-11		PLUG, CONNECTOR 9P		C234	1-163-005-11	CERAMIC CHIP	470PF	10%	50V				
*1-564-527-11		PLUG, CONNECTOR 12P		C235	1-163-005-11	CERAMIC CHIP	470PF	10%	50V				
*1-566-641-11		CONNECTOR, HINGE (TAB) 18P		C236	1-163-005-11	CERAMIC CHIP	470PF	10%	50V				
<b>&lt;COIL&gt;</b>													
L1751	1-412-240-11	INDUCTOR, WIDE BAND		C237	1-124-902-00	ELECT	0.47MF	20%	50V				
L1752	1-412-240-11	INDUCTOR, WIDE BAND		C238	1-163-125-00	CERAMIC CHIP	220PF	5%	50V				

J1

REF. NO.	PART NO.	DESCRIPTION		REMARK	REF. NO.	PART NO.	DESCRIPTION		REMARK					
R216	1-216-081-00	METAL GLAZE	22K	5%	1/10W	R1454	1-216-180-00	METAL GLAZE	180	5%	1/8W			
R217	1-216-077-00	METAL GLAZE	15K	5%	1/10W	R1455	1-216-180-00	METAL GLAZE	180	5%	1/8W			
R218	1-216-033-00	METAL GLAZE	220	5%	1/10W	R1457	1-216-025-00	METAL GLAZE	100	5%	1/10W			
R219	1-216-073-00	METAL GLAZE	10K	5%	1/10W	R1459	1-216-025-00	METAL GLAZE	100	5%	1/10W			
R220	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	R1460	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W			
R221	1-216-041-00	METAL GLAZE	470	5%	1/10W	R1461	1-216-190-00	METAL GLAZE	470	5%	1/8W			
R222	1-216-041-00	METAL GLAZE	470	5%	1/10W	R1462	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W			
R223	1-216-049-00	METAL GLAZE	1K	5%	1/10W	R1463	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W			
R224	1-216-049-00	METAL GLAZE	1K	5%	1/10W	R1464	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W			
R225	1-216-049-00	METAL GLAZE	1K	5%	1/10W	R1465	1-216-023-00	METAL GLAZE	82	5%	1/10W			
R226	1-216-049-00	METAL GLAZE	1K	5%	1/10W	R1466	1-216-033-00	METAL GLAZE	220	5%	1/10W			
R227	1-216-033-00	METAL GLAZE	220	5%	1/10W	R1467	1-216-025-00	METAL GLAZE	100	5%	1/10W			
R228	1-216-033-00	METAL GLAZE	220	5%	1/10W	R1468	1-216-025-00	METAL GLAZE	100	5%	1/10W			
R229	1-216-075-00	METAL GLAZE	12K	5%	1/10W	R1469	1-216-025-00	METAL GLAZE	100	5%	1/10W			
R230	1-216-091-00	METAL GLAZE	56K	5%	1/10W	R1470	1-216-025-00	METAL GLAZE	100	5%	1/10W			
R231	1-216-073-00	METAL GLAZE	10K	5%	1/10W	R1471	1-216-023-00	METAL GLAZE	82	5%	1/10W			
R232	1-216-073-00	METAL GLAZE	10K	5%	1/10W	R1472	1-216-023-00	METAL GLAZE	82	5%	1/10W			
R233	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	R1473	1-216-023-00	METAL GLAZE	82	5%	1/10W			
R234	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	R1474	1-216-113-00	METAL GLAZE	470K	5%	1/10W			
R240	1-216-033-00	METAL GLAZE	220	5%	1/10W	R1476	1-216-089-00	METAL GLAZE	47K	5%	1/10W			
R1401	1-216-023-00	METAL GLAZE	82	5%	1/10W	R1477	1-216-089-00	METAL GLAZE	47K	5%	1/10W			
R1402	1-216-170-00	METAL GLAZE	68	5%	1/8W	R1478	1-216-113-00	METAL GLAZE	470K	5%	1/10W			
R1403	1-216-089-00	METAL GLAZE	47K	5%	1/10W	R1480	1-216-190-00	METAL GLAZE	470	5%	1/8W			
R1404	1-216-178-00	METAL GLAZE	150	5%	1/8W	R1482	1-216-178-00	METAL GLAZE	150	5%	1/8W			
R1405	1-216-073-00	METAL GLAZE	10K	5%	1/10W	R1483	1-216-178-00	METAL GLAZE	150	5%	1/8W			
R1407	1-216-113-00	METAL GLAZE	470K	5%	1/10W	R1484	1-216-073-00	METAL GLAZE	10K	5%	1/10W			
R1408	1-216-089-00	METAL GLAZE	47K	5%	1/10W	R1485	1-216-073-00	METAL GLAZE	10K	5%	1/10W			
R1409	1-216-041-00	METAL GLAZE	470	5%	1/10W	R1486	1-216-073-00	METAL GLAZE	10K	5%	1/10W			
R1410	1-216-089-00	METAL GLAZE	47K	5%	1/10W	R1487	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W			
R1411	1-216-041-00	METAL GLAZE	470	5%	1/10W	R1488	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W			
R1412	1-216-089-00	METAL GLAZE	47K	5%	1/10W	R1489	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W			
R1413	1-216-113-00	METAL GLAZE	470K	5%	1/10W	R1501	1-216-081-00	METAL GLAZE	22K	5%	1/10W			
R1414	1-216-089-00	METAL GLAZE	47K	5%	1/10W	R1502	1-216-083-00	METAL GLAZE	27K	5%	1/10W			
R1415	1-216-083-00	METAL GLAZE	27K	5%	1/10W	R1503	1-216-113-00	METAL GLAZE	470K	5%	1/10W			
R1416	1-216-083-00	METAL GLAZE	27K	5%	1/10W	R1504	1-216-085-00	METAL GLAZE	33K	5%	1/10W			
R1417	1-216-023-00	METAL GLAZE	82	5%	1/10W	R1505	1-216-081-00	METAL GLAZE	22K	5%	1/10W			
R1418	1-247-738-11	CARBON	82	5%	1/2W F	R1506	1-216-113-00	METAL GLAZE	470K	5%	1/10W			
R1422	1-216-025-00	METAL GLAZE	100	5%	1/10W	R1509	1-216-105-00	METAL GLAZE	220K	5%	1/10W			
R1423	1-216-083-00	METAL GLAZE	27K	5%	1/10W	R1510	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W			
R1424	1-216-083-00	METAL GLAZE	27K	5%	1/10W	R1511	1-216-049-00	METAL GLAZE	1K	5%	1/10W			
R1425	1-216-049-00	METAL GLAZE	1K	5%	1/10W	R1512	1-216-073-00	METAL GLAZE	10K	5%	1/10W			
R1426	1-216-025-00	METAL GLAZE	100	5%	1/10W	R1513	1-216-091-00	METAL GLAZE	56K	5%	1/10W			
R1427	1-216-001-00	METAL GLAZE	10	5%	1/10W	R1514	1-216-049-00	METAL GLAZE	1K	5%	1/10W			
R1428	1-216-113-00	METAL GLAZE	470K	5%	1/10W	R1515	1-216-117-00	METAL GLAZE	680K	5%	1/10W			
R1429	1-216-113-00	METAL GLAZE	470K	5%	1/10W	R1516	1-216-079-00	METAL GLAZE	18K	5%	1/10W			
R1430	1-216-170-00	METAL GLAZE	68	5%	1/8W	R1517	1-216-033-00	METAL GLAZE	220	5%	1/10W			
R1431	1-249-413-11	CARBON	470	5%	1/4W	R1519	1-216-101-00	METAL GLAZE	150K	5%	1/10W			
R1432	1-249-413-11	CARBON	470	5%	1/4W	R1520	1-216-113-00	METAL GLAZE	470K	5%	1/10W			
R1433	1-216-033-00	METAL GLAZE	220	5%	1/10W	R1521	1-216-214-00	METAL GLAZE	4.7K	5%	1/8W			
R1434	1-249-393-11	CARBON	10	5%	1/4W F	R1556	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W			
R1437	1-216-073-00	METAL GLAZE	10K	5%	1/10W	<VARIABLE RESISTOR>								
R1440	1-216-045-00	METAL GLAZE	680	5%	1/10W	RV1501	1-238-023-11	RES, ADJ, CARBON	470K					
R1441	1-216-045-00	METAL GLAZE	680	5%	1/10W	RV1502	1-228-994-00	RES, ADJ, CARBON	10K					
R1442	1-216-089-00	METAL GLAZE	47K	5%	1/10W	RV1503	1-238-017-11	RES, ADJ, CARBON	22K					
R1443	1-216-089-00	METAL GLAZE	47K	5%	1/10W	RV1504	1-238-012-11	RES, ADJ, CARBON	1K					
R1444	1-216-033-00	METAL GLAZE	220	5%	1/10W	RV1505	1-238-023-11	RES, ADJ, CARBON	470K					
R1445	1-216-095-00	METAL GLAZE	82K	5%	1/10W	RV1506	1-238-017-11	RES, ADJ, CARBON	22K					
R1446	1-216-033-00	METAL GLAZE	220	5%	1/10W	RV1507	1-238-009-11	RES, ADJ, CARBON	220					
R1447	1-216-033-00	METAL GLAZE	220	5%	1/10W	RV1508	1-238-016-11	RES, ADJ, CARBON	10K					
R1448	1-216-025-00	METAL GLAZE	100	5%	1/10W	RV1509	1-238-023-11	RES, ADJ, CARBON	470K					
R1452	1-216-049-00	METAL GLAZE	1K	5%	1/10W	*****								
R1453	1-216-049-00	METAL GLAZE	1K	5%	1/10W									

The components identified by shading and mark **▲** are critical for safety.  
Replace only with part number specified.

REF. NO. PART NO. DESCRIPTION REMARK

MISCELLANEOUS  
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- ▲ I-426-372-11 COIL, DEMAGNETIZATION  
▲ I-451-311-31 DEFLECTION YOKE (Y25FXA)  
I-452-032-00 MAGNET, DISK; 10MM  $\phi$   
I-452-094-00 MAGNET, ROTATABLE DISK; 15MM  $\phi$   
▲ I-575-487-11 CORD, POWER (WITH NOISE FILTER)

V901 ▲ A-8-733-224-05 PICTURE TUBE (A59JWC60X)

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ACCESSORIES AND PACKING MATERIALS  
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PART NO. DESCRIPTION REMARK

- 1-465-363-11 COMMANDER ASSY (RM-689)  
\*A-1678-001-A BOX ASSY, WOOFER  
\*A-1678-010-A BOX ASSY (RIGHT), SPEAKER  
\*A-1678-012-A BOX ASSY (LEFT), SPEAKER  
\*3-704-280-01 BAG, PROTECTION (STANDARD)  
3-759-001-12 MANUAL, INSTRUCTION  
  
\*4-201-012-01 CUSHION (UPPER) (ASSY)  
\*4 201-013-01 CUSHION (LOWER) (ASSY)  
\*4-201-015-01 INDIVIDUAL CARTON  
\*4-380-340-01 BAG, PROTECTION